CONCEPT DESIGN REPORT AND

CONSTRUCTION COST ESTIMATE

FOR A BULK FUEL UPGRADE PROJECT

IN THE COMMUNITY OF:

HOONAH

PREPARED FOR:

STATE OF ALASKA

ALASKA ENERGY AUTHORITY/ RURAL ENERGY GROUP

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EXECUTIVE SUMMARY

This report has been prepared by Alaska Energy and Engineering, Inc. (AE&E) for the AIDEA/AEA Rural Energy Group (AEA/REG). The purpose of this study is to provide a concept design and construction cost estimate for a new bulk fuel storage and fuel handling facility in the community of Hoonah. The participants in the project include the City of Hoonah and Hoonah Trading, Inc.

In the fall of 2006, David Lockard of AEA/REG and John Dickerson of AE&E performed a site investigation for the proposed new bulk fuel upgrade project in Hoonah. A community meeting was held to discuss potential energy infrastructure projects. Following the meeting we visited the proposed tank farm site at the rock quarry across the street from the new Hoonah Marine Industrial Center construction site.

Hoonah Trading imports virtually all the fuel used in the community of Hoonah. The existing Hoonah Trading tank farm is past its useful life and in need of replacement. The existing tank farm site will be abandoned and the new rock quarry site will be developed to provide adequate area and set-backs for construction of the new tank farm, truck loading and vehicle dispensing facilities. The existing city dock located near the proposed tank farm site has adequate area and set-backs for development of new marine transfer and marine dispensing facilities. The City of Hoonah will be the owner and Hoonah Trading, Inc will be the operator of the facility. Since there is no history of avgas sales in the community, the avgas portion of this project may not to be grant funded due to AEA/REG policy and ownership may be by others if included.

A total of eight new tanks will be required to meet the projected fuel storage and dispensing requirements for the community. The tank farm will have a gross storage (tank shell) capacity of 170,000 gallons of no.2 diesel, 40,000 gallons of no.1 diesel, 40,000 gallons of gasoline and 10,000 gallons of avgas for a combined gross tank capacity of 260,000 gallons. The existing tank farm gross storage capacity is 211,000 gallons. The proposed capacity is slightly over the Denali Commission guideline of 120% of existing capacity.

The bulk storage tanks will be installed within a lined concrete dike and enclosed by a security fence. A dual product service station style dispenser will be provided at the vehicle dispensing area for retail sales of gasoline and no.2 diesel fuel. A truck loading facility for No. 1 diesel, No.2 diesel and avgas will be located adjacent to the tank farm.

All fuel will be delivered via barge. The installation will include new 4" No.2 diesel, 4" No.1 diesel, 4" gasoline and 3" avgas barge fill pipelines. The diesel fill pipelines will double as distribution pipelines to supply a large vessel marine loading facility. Three each 2" pipelines will supply No.2 diesel, No.1 diesel and gasoline to the vehicle and marine dispensing facilities.

The proposed project schedule calls for design and permitting to be completed by the early winter 2007, construction from April through July 2008, and the facility fully functional by August 2008.

The total project cost including all design, supervision, inspection, permitting, and a 15% contingency is estimated to be $2,136,381 which equates to a unit cost of $8.22 per gallon based on a gross storage capacity of 260,000 gallons. This is below the Denali Commission benchmark cost range of $9.50 to $8.50 per gallon for 200,001 gallon to 300,000 gallon capacity tank farms.

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ACRONYMS AND ABBREVIATIONS

ADCED	Alaska Department of Community and Economic Development
ADEC	Alaska Department of Environmental Conservation
AEA/REG	Alaska Energy Authority/Rural Energy Group
AIDEA	Alaska Industrial Development and Export Authority
API	American Petroleum Institute
ANTHC	Alaska Native Tribal Health Consortium
CDR	Conceptual Design Report
City	City of Hoonah
COE	U. S. Army Corps of Engineers
DOT	Alaska Department of Transportation and Public Facilities
F	degrees Fahrenheit
FRP	Facility Response Plan
EPA	U.S. Environmental Protection Agency
HUD	Housing and Urban Development
IFC	International Fire Code
NEC	National Electric Code
NFPA	National Fire Prevention Association
NFS	non-frost susceptible
SHPO	State Housing Preservation office
SPCC	Spill Prevention Control and Countermeasures
USCG	United States Coast Guard
USS	United States Survey
VSW	Village Safe Water
WTP	Water Treatment Plant

1.0 INTRODUCTION

This report has been prepared by Alaska Energy and Engineering, Inc. (AE&E) for the Alaska Energy Authority / Rural Energy Group (AEA/REG). The purpose of this study is to provide a concept design and construction cost estimate for a new bulk fuel storage and fuel handling facility in the community of Hoonah. The participants in the project include the City of Hoonah and Hoonah Trading, Inc.

1.1 Program Overview

The Alaska Energy Authority (AEA), Rural Energy Group is pursuing grant funds to upgrade rural bulk fuel tank farms. All project components are dependent on available funding. Following is a brief outline of the program:

- Most of the funds are federal and provided through the Denali Commission (DC). Other federal funding may be available from HUD (ICDBG) and the Environmental Protection Agency (EPA). Additional funds may be available from the State of Alaska, USDA, and loan financing.
- In order to receive grant funds, each community must demonstrate that the proposed facility will be sustainable by accepting a business plan. The business plan shall describe who will own the facility, and how it will be operated, maintained and replaced.
- New energy projects are funded, designed, and constructed in three phases: Phase 1, Conceptual Design; Phase 2, Design Completion; and Phase 3, Construction.
- During Phase 1, Conceptual Design, staff from AEA will visit a community, discuss the program, and work with residents and the local government to select sites for the new facilities.
- At the completion of Phase 1 Conceptual Design, the community will be requested to review and approve the location, capacity, and basic configuration of the facilities as well as a draft business plan.
- During Phase 2, Design Completion, the design for the new energy projects will be completed. An environmental assessment will be prepared and site control documented. A business plan will be prepared for signing.
- Each community will be requested to provide “in kind” contributions as available.
- Project may include local hire and construction trade training programs, subject to Denali Commission funding.
- If the Denali Commission approves the business plan it will be circulated for signature and construction procurement will start.
- Ineligible Projects: Funding is not available through AEA for buildings, propane facilities, fuel tank trucks or trailers, fuel to fill the tank farm, operation & maintenance costs, or residential tank upgrades. Loans for fuel tank trucks and trailers may be available through USDA.
- Training Available: AEA has several training programs available for communities.

1.2 Community Description

Hoonah is located on the northeast coast of Chichagof Island, 40 air miles west of Juneau. It lies at approximately 58.11° North Latitude and -135.44° West Longitude. (Sec. 28, T043S, R061E, Copper River Meridian.) The area encompasses 6.6 sq. miles of land and 2.1 sq. miles of water. Hoonah's maritime climate is characterized by cool summers and mild winters. Summer temperatures average 52 to 630; winter temperatures average from 26 to 39. Temperature extremes have been recorded from -25 to 87. Annual precipitation averages 100 inches, with 71 inches of snowfall. The population was estimated at 861 residents in 2005. Local governments include a first class city and an IRA council. Hoonah is located in the Sitka Recording District, the Hoonah City School District, and the Sealaska Regional Native Corporation but is not within an organized borough.

1.3 Site Investigation

On Thursday October 19 and 20, 2006, David Lockard of the Alaska Energy Authority / Rural Energy Group (AEA/REG) and John Dickerson of Alaska Energy and Engineering (AE&E) traveled to Hoonah. The purposes of this site visit were to: 1) meet with local officials as well as representatives of local and regional organizations to identify and discuss potential energy infrastructure projects within the community; 2) to gather reconnaissance level information for preparation of a Conceptual Design Report (CDR) for any identified energy infrastructure projects and; 3) to collect field data for the installation of a new 12,000 gallon double wall fuel tank at the IPEC power plant.

After a short weather delay in Juneau we arrived in Hoonah by plane around 1 PM. After a tour of the community we met Keith Berggren, Peter Bibb and Thomas Jack of Inside Passage Electrical Cooperative (IPEC) at the power plant. We spent the afternoon inspecting the IPEC facility and surveying the site in order to determine a suitable location for the proposed new fuel tank. A meeting was held the next morning at 8 AM to discuss potential energy infrastructure projects in Hoonah. David Lockard discussed the AEA/REG rural energy programs as well as Denali Commission (DC) funding requirements. Much of the meeting was spent discussing the proposed AEL&P Hoonah intertie extension as well as potential local hydro projects, the proposed City/Hoonah Trading consolidated bulk fuel storage project and the potential use of generation heat recovery in Hoonah. Meeting attendees included:

- Dennis H. Gray, Sr., Mayor, City of Hoonah
- Jerry Medina, Administrator, City of Hoonah
- Jan Supler, Vice President Retail Operations, Wards Cove/Hoonah Trading
- Steve Brown, General Manager, Hoonah Trading
- Tim McLeod, General Manager, AEL&P
- Corry Hildenbrand, Energy Resource Developer, AEL&P
- Vern Rauscher, General Manager, IPEC

- Keith Berggren, Generation Manager, IPEC
- Peter Bibb, Distribution Manager, IPEC
- Dick Somerville, P.E., PND Engineers
- Don Reid, Alaska Marine Lines

Following the meeting we reviewed plans for the new Hoonah Marine Industrial Center and visited the site where Phase I of the project is currently under construction. Discussions were held regarding the preferred location and layout of the proposed consolidated bulk fuel storage facility, automotive gas station, truck loading/bulk transfer facility, marine dispensing float, large vessel marine fuel dock and marine header.

1.4 Code Analysis

Prior work performed by the State of Alaska Division of Energy (DOE) included a code evaluation of existing facilities and preparation of a database summarizing results. The following is a summary of existing facility deficiencies observed:

- Improper Secondary Containment (Diking) –Tanks are not within a proper liquid tight secondary containment system of adequate capacity as required by the Fire Code and EPA regulations.
- No Emergency Vents - None of the tanks have emergency vents, in violation of the Fire Code.
- Improper Piping and Valves - Existing piping systems consist of steel piping with a combination of welded and threaded joints. The threaded joints are particularly prone to leaking.
- Gravity Dispensing - Code requires that all fuel dispensing be by pump.
- Above-Ground Dispensing Tank Capacity - State Fire Marshall requirements stipulate that the maximum size of an above ground dispensing tank is 12,000 gallons.
- Dispensing From Above-Ground Tanks Without Protective Systems - State Fire Marshall requirements stipulate protective devices and piping systems to prevent a gravity discharge of fuel in the event of a failure of the dispenser or piping. No protective devices are installed.
- Cathodic Protection of Buried Pipelines - Code requires all buried piping to have cathodic protection.
- Improper Site Location - The existing bulk/dispensing tanks do not appear to meet Fire Code minimum separation distance requirements from adjacent public ways and property lines for unprotected tanks.

The combination of deficiencies poses a significant threat to public safety and the environment. A major project is required to construct a new code and regulation compliant tank farm to meet the long-term needs of Hoonah.

The concept design for the new facility has been prepared to meet current code and regulatory requirements which include:

- The current edition of the International Fire Code, including State of Alaska Amendments
- The current edition of the National Electrical Code
- 40 CFR, Part 112.1-12, U.S. Environmental Protection Agency Spill Prevention Requirements
- 33 CFR, Part 154.30 & 154.1030, U.S. Coast Guard Spill Prevention Requirements

The design also incorporates appropriate industry standards such as National Fire Protection Association (NFPA) and American Petroleum Institute (API) as well as proven methods and materials that have been used successfully on other rural bulk fuel facilities in similar locations and climates.

2.0 EXISTING FUEL STORAGE FACILITIES - FUNCTION AND CAPACITY

The tank farm number below corresponds to the number assigned in the DOE database. Each facility was previously evaluated to determine specific needs and deficiencies. Tanks were visually examined to determine suitability for re-use. The following paragraphs summarize findings for the tank farm:

- ***Hoonah Oil Co. (No.1).*** This facility no longer exists.

- ***IPEC Power Plant (No.2).*** The existing power plant tank farm was built in 1977. It consists of three old BIA style vertical tanks and two ex-military domed-end horizontal tanks in a lined earthen dike as well as a gravity-fed exterior day tank located adjacent to the power plant. The two horizontal tanks have since been taken out of service. The current tank farm configuration has a gross shell capacity of approximately 26,000 gallons, including a 3,000 gallon double wall day tank. All fuel is delivered to this facility by tank truck. Deficiencies at the facility include: old rusted tanks; non-liquid tight dike membrane liner; non-code compliant piping, valves and appurtenances; lack of piping pressure relief; lack of cathodic protection on buried pipe; lack of emergency venting; lack of required overfill prevention; tank too close to building; and lack of surface flow containment at truck transfer area.

  In order to bring the Power Plant fuel storage into EPA compliance and to satisfy the corrective actions ordered in its 2004 SPCC plan, IPEC received grant funds from AEA/REG to purchase and install a new 12,000 gallon double wall tank. This project will provide the power plant with a fully code compliant fuel storage facility. The facility design was completed in January, 2007, the tank has been ordered and the installation will occur during the upcoming 2007 construction season. After completion the existing bulk tanks, day tank and associated fuel piping will be drained and purged.

- ***Hoonah School (#3).*** No current information - not included in this project.

- ***Icy Straight Point Resort (old Ward Cove Cannery) (#4).*** No current information - not included in this project.

- ***Hoonah Trading Co. (#5).*** The Hoonah Trading bulk fuel storage facility provides storage for virtually all the diesel fuel and gasoline received by the community. The facility is well maintained but is nearing the end of its useful life, having been constructed more than fifty years ago. It consists of six in-service vertical steel bulk storage/dispensing tanks, a three product marine header, a three product marine fueling station, a three product vehicle gas station, a diesel truck loading rack, and three 4" diameter barge fill/distribution pipelines. The tank farm is located on the hillside above the Hoonah Trading store. Tank farm access is by a covered wooden stairway from 1st Street. The fuel is used for local power generation, vehicle dispensing, marine dispensing and heating fuel delivery. All dispensing and bulk transfers are by gravity.

  The total gross shell capacity of the facility is approximately 211,000 gallons. It consists of six vertical bulk storage/dispensing tanks with capacity for 154,000 gallons of No.2 diesel, 19,000 gallons of No.1 diesel and 38,000 gallons of unleaded gasoline. The tank farm is built on a two-tiered site with four tanks on the lower level and two tanks on the upper level. It is completely surrounded by chain link fence. Concrete walls on the sides and across the front of both tiers provide some surface flow containment but there is no dike membrane liner and the containment is not liquid tight. The tanks are equipped with normal vents and manways. There are 4" flanged bottom connections with flanged steel ball valves and 1" threaded steel PRV jumpers for pipeline pressure relief. The manifold piping appears to be in good condition and is well supported but there are no flexes between tank connections. The tanks are all supported on concrete bases.

  There are three each 4" diameter welded steel barge fill/distribution pipelines that run from the marine header to the tank farm, supported under the dock, then buried under the road and finally above grade up the hill to the tank farm.

  A three product marine header is located on the end of the fuel dock. Each barge connection has a 4" quick disconnect hose coupling, a 4" flanged steel check valve, and a 4" flanged steel plug valve. There is a steel drip pan that serves all three marine header fill connections which does not appear to have adequate capacity to meet the 84 gallon containment requirement. The marine dispensers are also located under a rain shelter on the face of the fuel dock and are gravity fed with 2" welded steel branch pipelines off of the main 4" barge fill/distribution pipelines.

  There is a truck rack located near the Hoonah Trading store that allows for bulk loading No.1 or No.2 diesel into a tank truck for fuel deliveries throughout the community. There is also a two product gasoline and No.2 diesel vehicle dispenser located on the dock near the store.

- ***Hoonah City Shop (#6).*** No current information - not included in this project.

- ***Whitestone Logging Camp (#7).*** This facility is drained and abandoned - not included in this project.

- ***Tlingit-Haida Regional Housing (#8).*** This facility is less than 1,300 gallons in storage capacity and therefore no longer meets the EPA criteria for a regulated bulk fuel storage facility - not included in this project.

- ***Private Residence (#9).*** This facility is less than 1,300 gallons in storage capacity and therefore no longer meets the EPA criteria for a regulated bulk fuel storage facility - not included in this project.

- ***Hoonah Cold Storage (No.10).*** No current information - not included in this project.

2.1 Existing Equipment Suitable for Reuse

All of the existing tanks and piping systems are old and at or near the end of their usable life. There is nothing suitable for reuse.

2.2 Demolition of Existing Tanks

The scope of this project will also include removal from service of all existing tanks. All abandoned tanks will be drained of product, the piping will be removed, and the tank connections will be plugged or blind flanged in accordance with current AEA standards and procedures. Final demolition and disposal will be the responsibility of others.

3.0 CURRENT FUEL CONSUMPTION

Hoonah Trading imports virtually all the fuel used by the community of Hoonah. Therefore fuel purchase records were obtained from Hoonah Trading for 2004 and 2005 in order to determine community fuel use quantities. The following table summarizes average consumption and existing storage capacity. All capacities are in gallons. Net capacity is calculated as 90% of the tank gross (shell) capacity.

CURRENT CONSUMPTION VERSUS EXISTING COMMUNITY CAPACITY

Product	Average Annual Use (1)	Existing Net Capacity	Existing Gross Capacity
No.2 Diesel Fuel	1,000,000	138,600	154,000
No.1 Diesel Fuel	210,000	17,100	19,000
Unleaded Gasoline	250,000	34,200	38,000
Existing Total	**1,460,000**	**189,900**	**211,000**

(1) Two year average for 2004 and 2005

3.1 Planned Infrastructure Improvements

It is important to evaluate the impact of planned near-term infrastructure improvement projects on existing utility systems. Even small scale utility improvements and commercial development can adversely impact the adequacy of existing fuel storage capacity in locations with limited seasonal access to fuel deliveries. However with fuel barge deliveries available every two weeks on a year-round basis Hoonah has no such limitation for increasing deliveries as needed. Given the existing community bulk fuel storage capacity, only around half of the available fuel barge deliveries are currently required to meet community fuel needs. Therefore there are not expected to be any near-term improvements that will have an appreciable impact on bulk fuel storage requirements in Hoonah.

3.2 Alternative Energy / Efficiency Improvements

This subject will be fully investigated in the separate Rural Power System Upgrade (RPSU) report to be completed in the near future. Due to the fact that the new bulk fuel storage facility will be designed with the storage capacity of only one peak-month's use for each product (see Section 3.3) it is not likely that any future alternative energy projects or efficiency improvements will appreciably alter the design capacity. Also, any major alternative energy project is likely to be several years away given the time required for planning, design, permitting and construction while the new tank farm could conceivably be under construction by spring 2008.

3.3 Tank Capacity Requirements

Hoonah is located on a year round ice free port with a deep water dock capable of receiving ocean-going barges. Fuel deliveries by barge are available from at least two different vendors and are scheduled to be in the area at least twice per month. According to fuel delivery records, the community has recently averaged

approximately sixteen barge deliveries per year, spaced from two weeks to one month apart. Based on this delivery schedule and to ensure no future disruptions in fuel supply, the facility should be sized to hold an approximate one peak-month supply of each product with an adequate reserve margin. The following table compares the current annual and one peak month use for each product to the proposed net useable tank capacity for the new facility:

CONSUMPTION VERSUS CAPACITY

Product	Average Annual Use in Gallons (1)	Estimt'd Peak 1 Month Use in Gallons	Proposed Net Capacity in Gallons (2)	% of Est. Peak 1 Month Use	% of Est. Annual Use	Proposed Gross Capacity in Gallons
Gasoline	250,000	30,000	36,000	120%	14%	40,000
No.1 Diesel	210,000	30,000	36,000	120%	17%	40,000
No.2 Diesel	1,000,000	125,000	153,000	122%	15%	170,000
Avgas (3)	0	n/a	9,000	n/a	n/a	10,000
Total	**1,460,000**		**234,000**			**260,000**

(1) C*alendar years 2004 and 2005.*

(2) *Net capacity (90% of gross shell capacity)*

(3) *No existing avgas storage but planning to begin avgas sales at airport*

4.0 SITE SELECTION

All work proposed for this project will be located at two sites designated as follows: (1) The new consolidated tank farm, bulk transfer and vehicle dispensing (Tank Farm) site; and (2) the new marine header, large vessel marine transfer and marine dispensing facility (Fuel Dock) site.

4.1 Tank Farm Site

The proposed Tank Farm site is shown in Appendix A, Site Plan Sheet M1. It is located in an old quarry site to the north of the Gartina Highway in the area between the ferry dock and the city dock. This area has been identified as a preferred site for locating a consolidated tank farm by project participants since 1999. However at that time there was inadequate level ground available between the highway and the tall rock face behind. This area has since been selected as the site for the new Hoonah Marine Industrial Center (HMIC), phase 1 of which was recently completed. The rock face was blasted and the fill placed in the tidelands to the south side of the highway. The final extent of available level ground on the north side of the highway was field measured to approximate dimensions in May, 2007. The conceptual BFU design site layout is based on

this approximate quarry area. There appears to be adequate area for tank farm development as well as for locating the proposed new vehicle dispensing and bulk transfer facilities. A survey will need to be performed prior to the final BFU design to determine the actual extent of the quarry. At this time it does not appear that there will be any additional area available for development by the city within the quarry area due to the smaller than expected final footprint.

The tank farm site is approximately 200 feet from the shore and five feet above the level of the Hoonah Harbor. According to the Corps of Engineers, Alaska Communities Flood Hazard Data, June 2000, there is no serious threat of flooding in Hoonah.

4.2 Fuel Dock Site

The proposed Fuel Dock site is shown in Appendix A, Site Plan Sheet M1. It is located approximately 300' south of the proposed tank farm site on the opposite side of paved Gartina Highway. The proposed new marine header and large vessel marine fueling station will be installed on the existing dock. The marine dispensing facility will be located on a new fuel float provided by others. New barge fill and distribution pipelines will be supported below the dock and will be buried across Gartina Highway to the tank farm site.

4.3 Site Control

A Certificate to Plat was issued by First American Title of Alaska effective March 23, 2007. A copy of the Certificate to Plat is included in Appendix C.

The proposed new tank farm site is located within U.S. Survey 1929. This property is vested in the City of Pelican.

The proposed fuel dock is located on the existing city dock, within the un-subdivided portion of Alaska Tidelands Survey No. 29, which is vested in the City of Hoonah. Gartina Highway is also located within U.S. Survey 4539, Hoonah Townsite and is owned by the City of Hoonah.

5.0 PROPOSED FACILITY DESCRIPTION

The proposed new tank farm will include a total of six each welded steel vertical bulk storage tanks, including four at 40,000 gallons for No.2 diesel storage, one at 30,000 gallons for No.1 diesel storage and one at 30,000 gallons for gasoline storage. There will also be two horizontal skid-mounted welded steel dispensing tanks, with each tank divided into two equal 10,000 gallon partitions. The partitions will provide for dispensing of the No.2 diesel, No.1 diesel and gasoline as well as storage and transfer of avgas. Secondary containment will be provided by a lined concrete dike. A truck loading facility will provide for top loading of No.2 diesel, No.1 diesel and avgas. It will be constructed adjacent to the tank farm and situated so that secondary containment is provided by the tank farm dike. A service station style dual product gasoline and No.2 diesel dispenser in the center of a two vehicle slab will be installed near the tank farm.

New 4” diameter pipelines will be installed for No.2 diesel, No.1 diesel and gasoline. A 3" diameter pipeline will be installed for avgas deliveries. The No.2 diesel, No.1 diesel and gasoline pipelines will be equipped with branch tees and isolation valves to allow them to serve as fill pipelines for barge deliveries as well as distribution pipelines for dispensing and bulk transfer operations. The pipelines will be suspended below the fuel dock and buried from the fuel dock to the new tank farm. A drip pan will be provided on the dock at the termination of the fill pipelines (marine header). A combination of centrifugal and submersible pumps will be used for bulk transfer and dispensing functions.

A large vessel marine fuel transfer facility with hose stands and meters will be located near the marine header on the main fuel dock. A separate fuel float will be used for retail fuel sales to smaller vessels and will include marine dispensing of No.2 diesel, No.1 diesel and gasoline.

See Appendix A, Sheets M1 through M5 for conceptual design drawings.

5.1 Secondary Containment

The International Fire Code and E.P.A. regulations require fuel tanks to be installed within a secondary containment structure that is capable of holding the contents of the largest tank plus sufficient freeboard to hold accumulated precipitation. The regulations also include provisions for alternative secondary containment utilizing double wall tanks with redundant overfill protection equipment. A combination of vertical bulk tanks and partitioned horizontal single wall dispensing tanks installed within a vertical wall containment dike provides for the minimum tank farm footprint so no double wall tanks were utilized.

The secondary containment dike will be 44 ’ wide x 99' long x 3’ high, providing a net capacity of 68,000 gallons which is equal to the capacity of the largest tank plus 11” of freeboard for precipitation. The dike walls will be constructed of poured concrete and lined with a membrane liner compatible with both diesel fuel and gasoline. A non-woven geotextile fabric will be placed above and below the liner to minimize the risk of puncture and damage and an 8” deep layer of gravel cover will be placed over the liner. Sheet metal covers will be installed over the liner and non-woven geotextile on the inside of the vertical walls. A catwalk will be installed across the top of the dike to allow access to valves and gauges on each tank. The dike will be separated into two cells with an 18" high intermediate curb (wall) to limit the aggregate storage in each individual cell to no more than 150,000 gallons in accordance with Fire Code and NFPA requirements.

5.2 Tanks

A total of six new vertical bulk storage tanks will be required – one 30,000 gallon tank for unleaded gasoline storage, one 30,000 gallon tank for No.1 diesel storage, and four each 40,000 gallon tanks for No.2 diesel storage. The two 30,000 gallon capacity vertical tanks will be 15' in diameter by 23' tall. The four 40,000 gallon capacity vertical tanks will be 15' in diameter by 31' tall. The vertical tanks will be installed on poured concrete ring walls sized to resist buoyant, seismic, and wind forces.

Two new 20,000 gallon dispensing tanks will be required with 10,000 gallon partitions for unleaded gasoline, #1 diesel, #2 diesel and avgas. These tanks will be horizontal single wall welded steel tanks built and labeled in accordance with UL 142. The tanks will be equipped with steel skid foundations which will be placed on poured concrete strip footings.

All tanks will be equipped with level gauges, pressure/vacuum whistle vents, emergency vents, manholes, access ladders, and water draws. All tanks will be coated with an inorganic zinc primer and two layers of epoxy for corrosion protection.

5.3 Piping/Valves/Pumps/Accessories

All above-grade piping will be schedule 80 steel with a high density polyethylene coating. All below-grade piping will be schedule 80 steel with a high density polyethylene coating and cathodic protection. Above-grade piping will be installed on concrete pads or supported from tanks or structures and secured with steel pipe straps or hangers. All fuel dock piping will be secured with stainless steel strut and pipe straps or hangers. All piping joints will be welded or flanged except for connections to pumps and specialty valves which may be threaded. Sufficient flanged joints will be provided to allow service of pumps and other devices. All connections to pumps and tanks will be made with stainless steel flexible connectors. Each isolated section of piping will be provided with pressure relieving devices to account for thermal expansion of product caused by temperature fluctuations. Provisions for movement of the piping caused by thermal expansion and contraction will also be included. Valves will be either carbon steel or stainless steel body industrial grade valves intended for use with fuels.

Three 4" diameter and one 3" diameter fill pipelines will be routed from a new marine header approximately 400' feet to the tank farm. A drip pan will be provided at the termination of the fill pipelines (marine header). Three 2" diameter dispensing pipelines will also run from the dock to the tank farm. All pipelines will be partially dock-mounted and partially buried.

A service station style dual product dispenser for unleaded gasoline and No.2 diesel will be installed in a security enclosure at the vehicle dispensing facility. A magnetic stripe card reader type inventory control system will be installed to allow for debit

card sales. Vehicle dispensing equipment will include an electronic dual product dispenser, submersible pumps, 3/4" hose and 3/4" auto shutoff nozzles.

A truck loading facility will be provided to allow filling the tanker truck with No.1 diesel, No.2 diesel or avgas. The truck loading equipment will include: a submersible pump on the avgas tank partition; centrifugal pumps for #1 and #2 diesel; pipeline filters; custody transfer meters; fuel hose; bulk transfer nozzles; an overhead truck loading rack; and a static grounding line.

A marine fueling facility will be provided on the fuel dock to allow bulk transfers of No.1 and No.2 diesel to large marine vessels. The marine fueling equipment will include: two centrifugal pumps; two pipeline filters; two custody transfer meters; two hose reels; fuel hose; two bulk transfer nozzles; and a static grounding line.

A marine dispensing facility will be provided on a fuel float to allow dispensing of unleaded gasoline, No.1 diesel and No.2 diesel to small marine vessels. The fuel float will be provided by others. Marine dispensing equipment will be provided by the project and will include: submersible pumps on the No.1 diesel, No.2 diesel and unleaded gasoline dispensing tank partitions; three pipeline filters; three custody transfer meters; three spring rewind hose reels; fuel hose; and dispensing nozzles for all three products within a lockable welded marine grade aluminum security enclosure.

5.4 Security

The entire bulk storage dike will be enclosed by a 6’ tall chain link fence with a 1’ high barbed wire top. Two 3' wide access gates and one 12' wide vehicle gate will be provided into the fenced enclosure. All valves will be provided with lockable handles to prevent theft and vandalism. Pump controls will be installed within fenced security areas where possible. Area lighting will be provided at the dispensers, pump controls, and dike for security and spill detection and to enhance winter operation.

5.5 Proposed Operating Scenario

A long term agreement between Hoonah Trading Co. (current private owner of the only local fuel service), and the City of Hoonah (potential grantee of construction funding) will need to be drafted in order to define ownership and operating agreements for the new fuel storage and handling facility. This agreement will be included in the business plan which must be completed prior to beginning the final project design. The avgas portion of this project may not be grant funded due to AEA/REG policy on products not provided in the community prior to the project. A separate ownership agreement may also be required for the avgas equipment.

Management responsibilities of the new tank farm include: maintenance and operation of all tanks, pumps, and piping systems; annual pressure testing of pipelines; maintenance and replacement of spill response equipment and supplies; and snow removal.

6.0 PERMITTING AND SPILL RESPONSE

The new facility will be subject to Regulations of both State and Federal agencies including the Division of Governmental Coordination, the Division of Fire Prevention, the U.S. Environmental Protection Agency, and the U.S. Coast Guard. Depending upon local conditions, additional permitting agencies such as the U.S. Fish and Wildlife Service, the U.S. Army Corps of Engineers, the State Historic Preservation Office, and the Alaska Department of Natural Resources may become involved.

Hoonah is not located within an organized borough so the project will not require a local development permit.

6.1 Environmental Assessment

An Environmental Assessment (EA) will be completed prior to construction of the proposed project. An EA is required for all projects that are federally funded or require a federal permit (such as a Corps of Engineers Wetlands Permit). The EA determines whether there is a significant impact to the environment caused by the project. As part of the EA, a Coastal Zone Management Project Questionnaire will be completed and submitted to the Alaska Coastal Management Program. The Coastal Zone Management Project Questionnaire will help identify state or federal permits that may be required. A Corps of Engineers wetlands permit should not be required for construction as all fill material will be placed in uplands and not in navigable waters. However, the need for a permit will be investigated further with the Corps of Engineers early in the permitting phase.

6.2 Fire Code

A Plan Review permit from the State Fire Marshal is required for this project. Final stamped design drawings will be submitted to the Fire Marshal for review prior to construction. Plans will be reviewed for conformance with the International Fire Code and related codes including the International Building Code and the National Electrical Code. The review process can take anywhere between 3 weeks to 6 months.

6.3 Spill Response

Because the new City bulk tank farm will have oil storage tanks in excess of 1,320 gallons and will receive delivery by marine vessel, it will be subject to U.S. Environmental Protection Agency and U.S. Coast Guard regulations. An Operations Manual and Letter of Intent will be prepared and submitted to the Coast Guard. An Oil Spill Response Plan will be prepared and submitted to both the Coast Guard and the EPA. The tank farm will require preparation of a Spill Prevention Control and Countermeasures (SPCC) plan. This plan will address all tanks with a capacity of 55 gallons or greater. The required Coast Guard and

EPA plans will be prepared upon completion of facility construction as a coordinated package.

Spill response gear including sorbent material and protective safety gear will be purchased and left on-site upon project completion along with a refurbished existing tank to serve as oil-spill contingency storage.

7.0 CONSTRUCTION PLAN

The AEA/REG has a history of administering similar projects on a "modified" force-account basis. Force-account construction involves the owner or grantee acting as the employer and utilizing primarily local labor. This method tends to achieve a higher percentage of local hire and is strongly supported by many communities and funding agencies. The highly technical nature of tank farm projects requires a limited number of workers with specific experience and expertise to be brought in for the project when not available locally. All work must be supervised and managed by a superintendent with extensive experience in the construction of rural fuel facilities. All specialty work, such as pipe welding and electrical installation must be performed by skilled craftsmen with appropriate certifications. An experienced construction manager will be required to recruit the necessary skilled labor, coordinate the construction team, and oversee procurement and project logistics. The design engineer will provide quality control through communication with the construction manager and periodic on-site inspections.

Alaska Marine Lines provides scheduled barge service into Hoonah and the Alaska Marine Highway provides drive-on, drive-off ferry service year round into Hoonah. There is also adequate staging area at the tank farm site, which is directly adjacent to both the barge landing and the ferry dock. Therefore all materials and supplies for this project can be delivered directly to Hoonah and staged for construction.

7.1 Local Job Skills

The City was not able to provide information regarding the availability of specialty skilled labor in Hoonah. Due to the relatively large population of this community it is likely that there are a number of local residents with specialty skills and general labor experience in various types of construction. It should be assumed that at a minimum a project superintendent, a pipe welder/mechanical foreman, and a journeyman electrician will need to be brought into Hoonah for this project.

7.2 Local Equipment

The City was not able to provide an inventory of locally available heavy equipment. Calls to local contractors confirmed that there is a considerable amount of heavy equipment in the community, including several 200 class excavators, small and medium sized dozers, a 25-ton track crane and 10 yard dump trucks. It is likely that a skid steer loader is the only piece of equipment that will need to be imported into Hoonah for this project.

7.3 Material Sources

Gravel will be required for finish grading at the tank farm site, for covering the liner inside the dike and for concrete aggregate. There are stockpiles of blast material available in Hoonah. A small screen is available locally that is capable of producing the required quantities of structural fill for tank farm site development as well as 1" minus gravel for covering the liner. No concrete aggregate is available in large quantities locally and will need to be purchased in one yard super sacks and delivered to Hoonah by barge from Seattle.

8.0 SCHEDULE

The following schedule has been developed on the basis of performing the majority of the work during early spring through summer 2008. This schedule is contingent on timely approval of the plan by the City of Hoonah and Denali Commission as well as on funding availability. The schedule is also contingent on the City and Hoonah Trading completing all required work on the existing fuel dock structure and installation of a new marine dispensing float.

- July-Oct 2007: Design, permitting, and site control.
- Nov-Dec 2007: Order tanks and long-lead items
- Jan- Feb 2008: Order rest of materials.
- April 2008: Project mobilization.
- April-July 2008: Project construction.
- Aug 2008: Punch list completion, train operators.
- Sep-Nov 2008: O&M manuals and project close out.

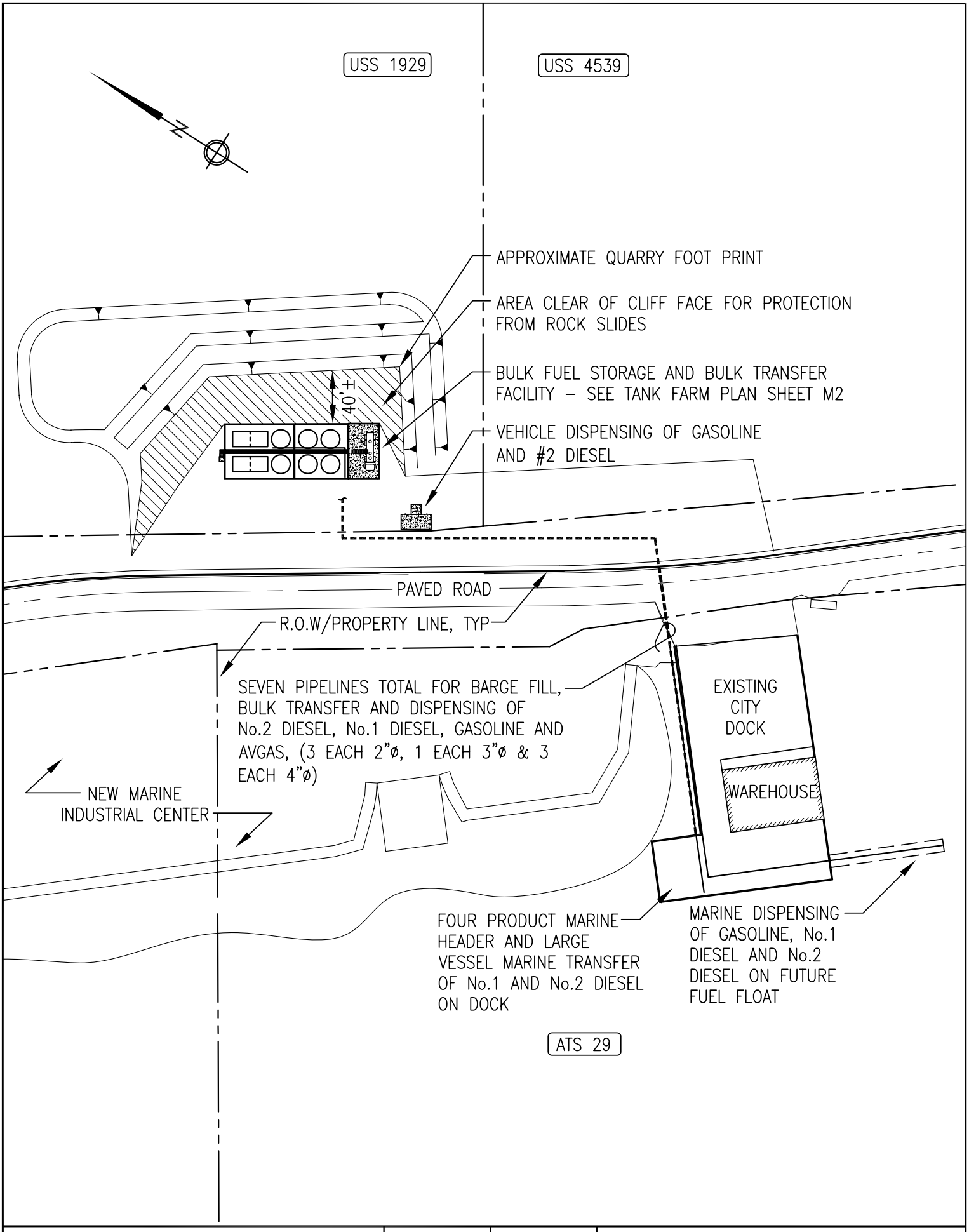
9.0 COST ESTIMATE

The construction cost estimate has been developed based on a "modified" force-account approach utilizing a combination of local labor, certified craftsmen, and specialty sub-contractors under the direction of an experienced superintendent. Labor rates are based on Title 36 equivalent wages for certified specialty labor and prevailing local force-account wage rates for general labor and equipment operation.

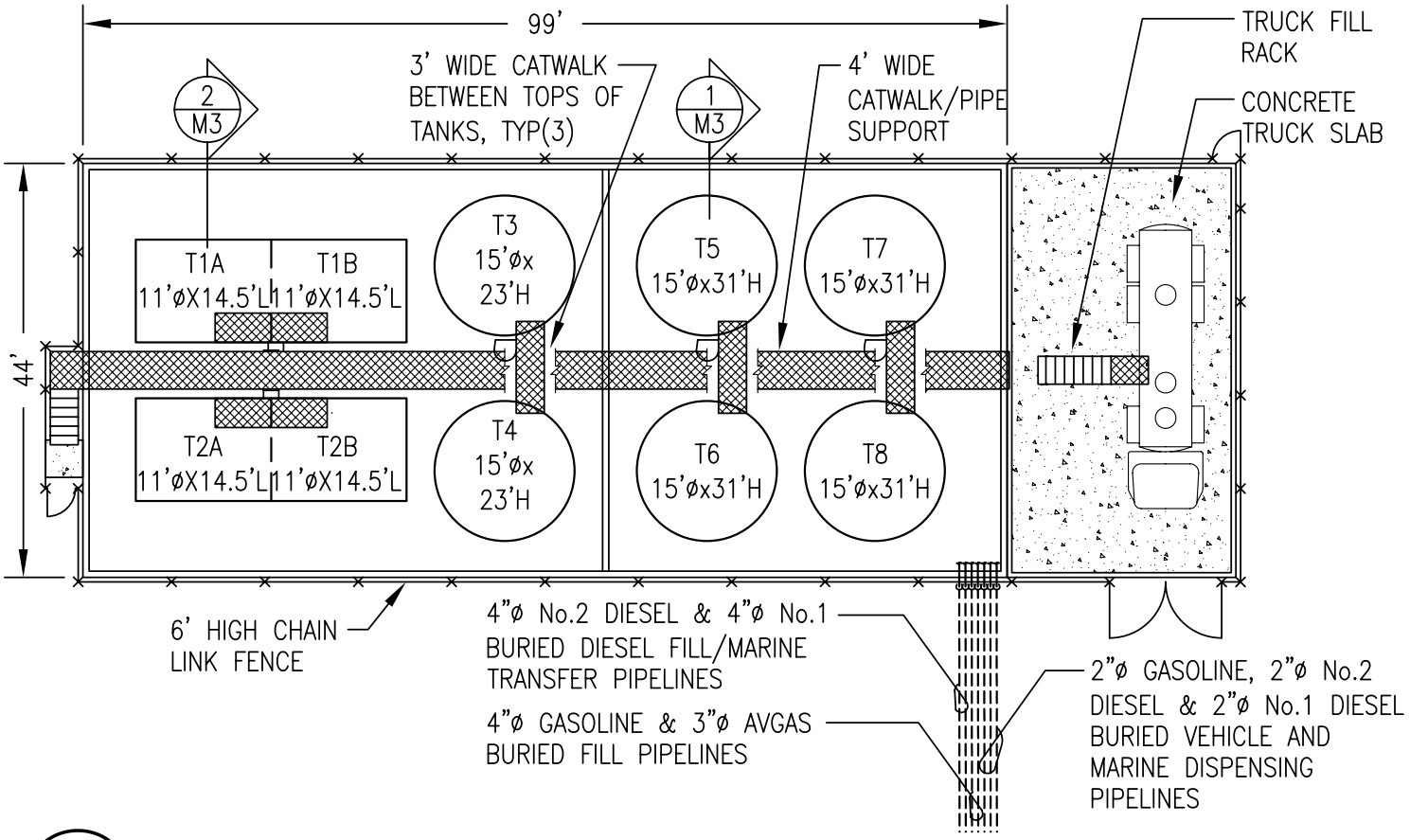
The total project cost including all design, supervision, inspection, permitting, and a 15% contingency is estimated to be $2,136,381 which equates to a unit cost of $8.22 per gallon based on a gross storage capacity of 260,000 gallons. This is below the Denali Commission benchmark cost range of $9.50 to $8.50 per gallon for 200,001 gallon to 300,000 gallon capacity tank farms.

APPENDIX A

CONCEPT DESIGN DRAWINGS



PROJECT: HOONAH BULK FUEL UPGRADE PROJECT	DRAWN BY: JTD	SCALE: 1"=100'	State of Alaska Department of Community and Economic Development AIDEA/AEA Rural Energy Group 813 West Northern Lights Blvd. Anchorage, Alaska 99503 ALASKA ENERGY AUTHORITY
	DESIGNED BY: BCG	DATE: 6/18/07	
TITLE: OVERALL SITE PLAN	FILE NAME HOONAHBF CDR	SHEET M1 OF 5	



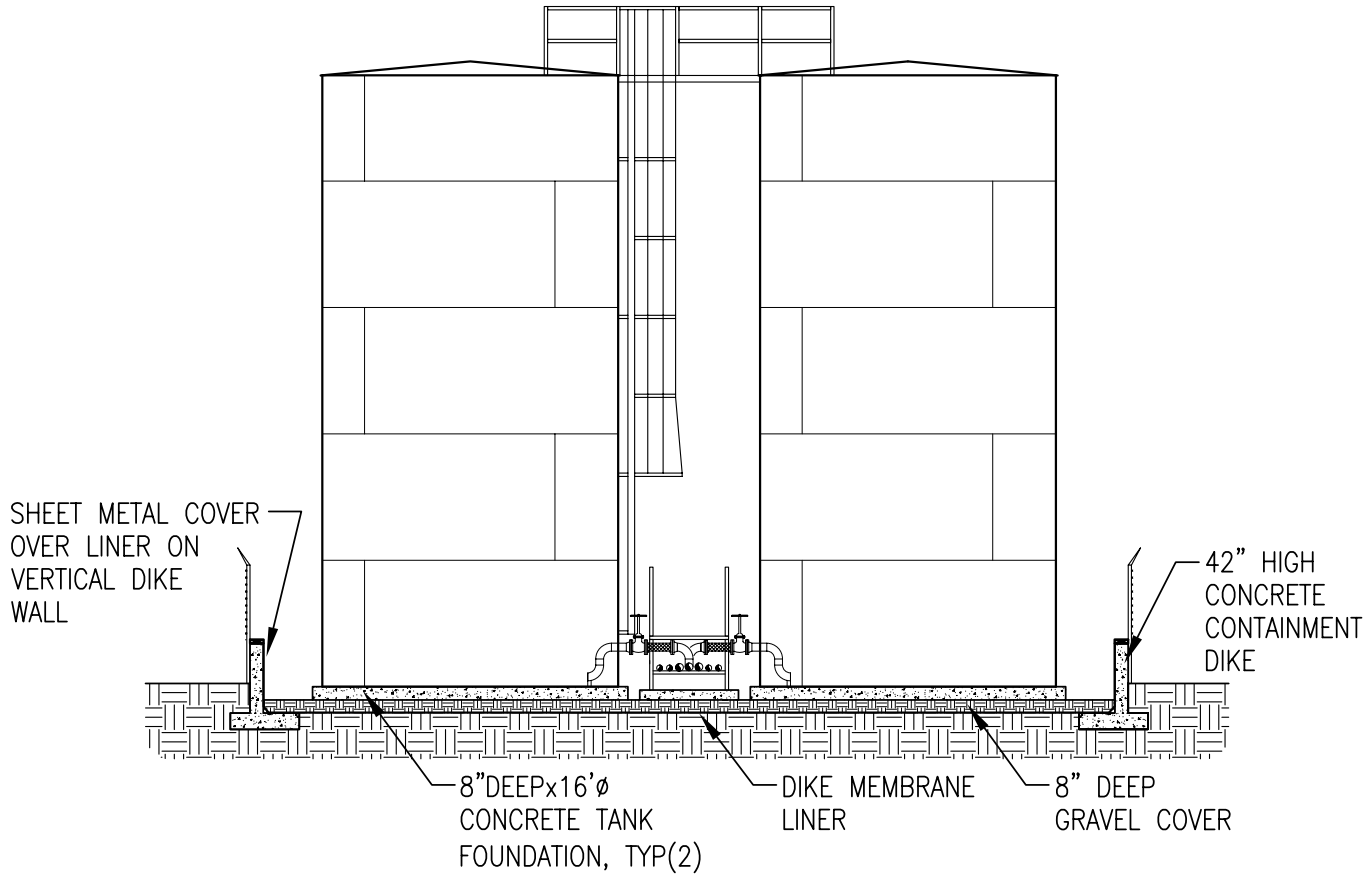
1/M2 DIKE PLAN

1"=20'

TANK SCHEDULE (ALL TANKS NEW CONSTRUCTION)							
TANK #	OWNER (1)	TYPE (2)	FUNCTION	#1 DIESEL CAPAC.(3)	#2 DIESEL CAPAC.(3)	GASOLINE CAPAC.(3)	AVGAS CAPAC.(3)
T1A	CITY	PSW	DISPENSING			10,000	
T1B	CITY	PSW	BULK				10,000
T2A	CITY	PSW	DISPENSING	10,000			
T2B	CITY	PSW	DISPENSING		10,000		
T3	CITY	V	BULK			30,000	
T4	CITY	V	BULK	30,000			
T5	CITY	V	BULK		40,000		
T6	CITY	V	BULK		40,000		
T7	CITY	V	BULK		40,000		
T8	CITY	V	BULK		40,000		
PROJECT STORAGE CAPACITY BY PRODUCT				**40,000**	**170,000**	**40,000**	**10,000**
PROJECT TOTAL GROSS STORAGE CAPACITY							**260,000**

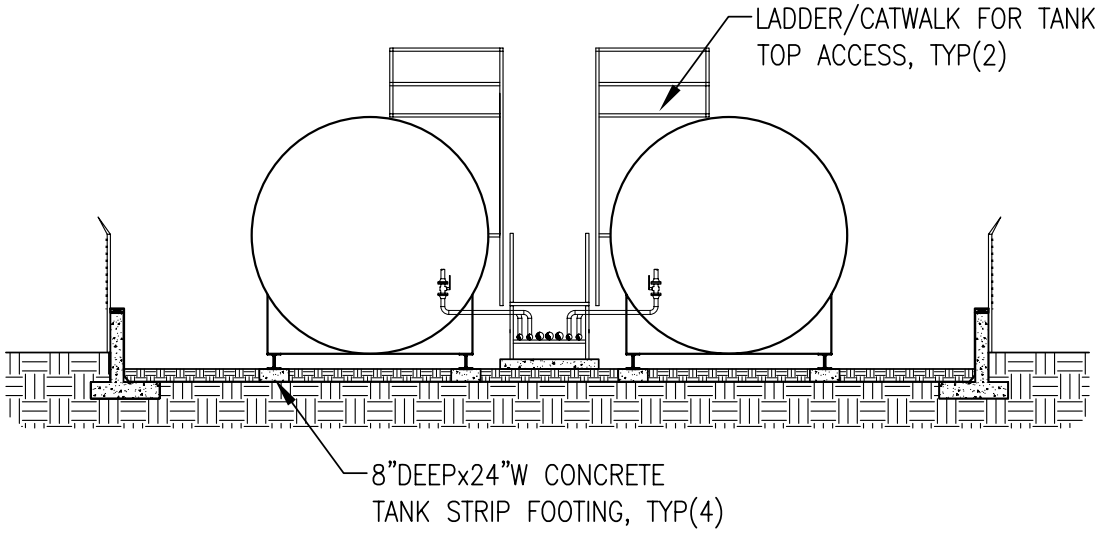
NOTES:
1) CITY OF HOONAH (CITY)
2) V = VERTICAL, SW = PARTIONED SINGLE WALL HORIZONTAL
3) ALL CAPACITIES ARE GROSS SHELL CAPACITY IN GALLONS

PROJECT: HOONAH BULK FUEL UPGRADE PROJECT	DRAWN BY: JTD	SCALE: AS NOTED	State of Alaska Department of Community and Economic Development AIDEA/AEA Rural Energy Group 813 West Northern Lights Blvd. Anchorage, Alaska 99503 ALASKA ENERGY AUTHORITY
	DESIGNED BY: BCG	DATE: 6/18/07	
TITLE: TANK FARM PLAN & TANK SCHEDULE	FILE NAME: HOONAHBF CDR	SHEET: M2 OF: 5	



1/M3 TYPICAL DIKE SECTION THROUGH VERTICAL TANKS

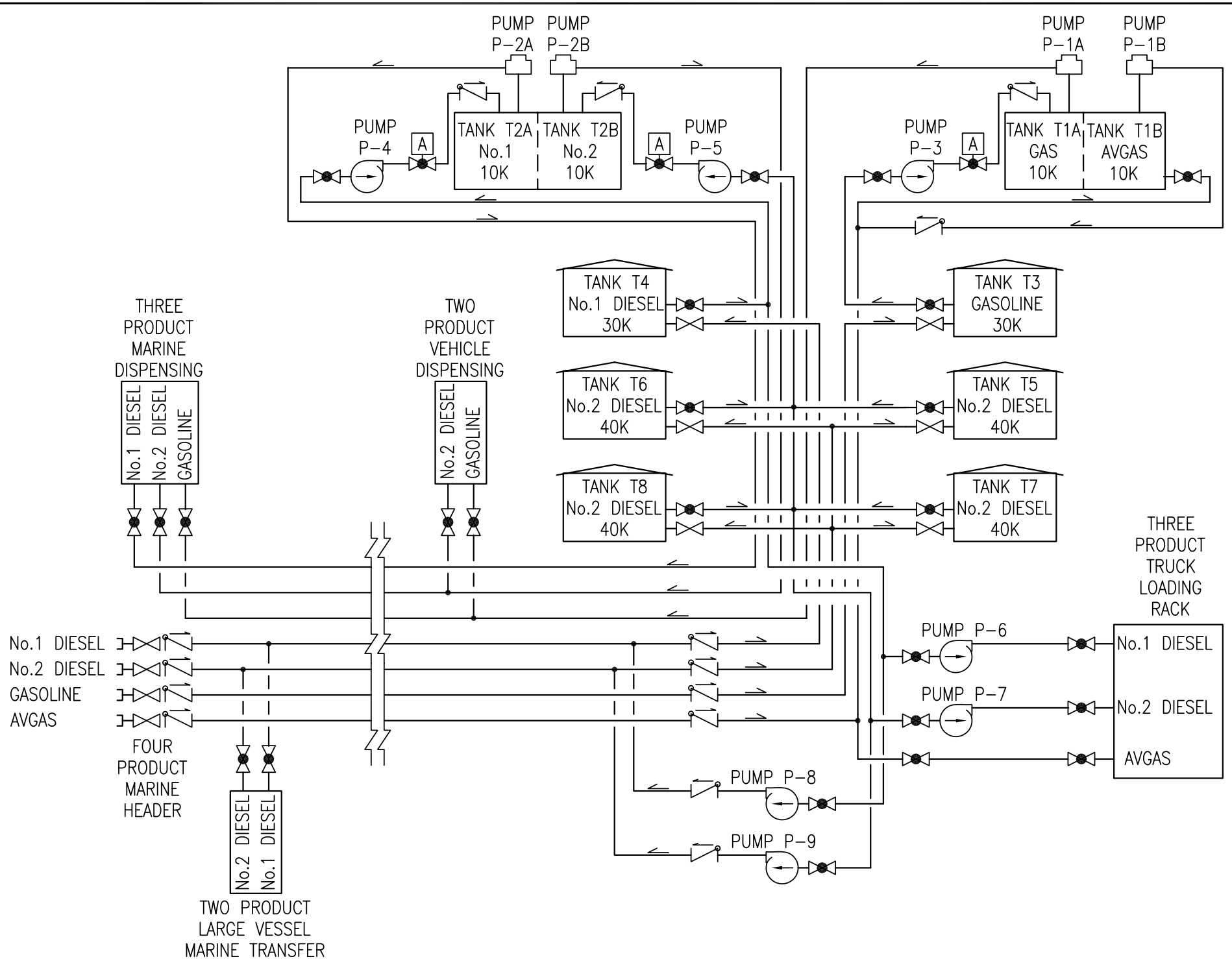
1"=10'



2/M3 TYPICAL DIKE SECTION THROUGH HORIZONTAL TANKS

1"=10'

PROJECT: HOONAH BULK FUEL UPGRADE PROJECT	DRAWN BY: JTD	SCALE: NO SCALE	State of Alaska Department of Community and Economic Development AIDEA/AEA Rural Energy Group 813 West Northern Lights Blvd. Anchorage, Alaska 99503 ALASKA ENERGY AUTHORITY
	DESIGNED BY: BCG	DATE: 6/18/07	
TITLE: DIKE SECTIONS	FILE NAME HOONAHBF CDR	SHEET M3 OF 5	



PROJECT: HOONAH BULK FUEL UPGRADE PROJECT

TITLE: TANK FARM PIPING DIAGRAM

DRAWN BY: JTD
DESIGNED BY: BCG
FILE NAME: HOONAHBF CDR

SCALE: NO SCALE
DATE: 6/18/07
SHEET M4
OF 5

State of Alaska
Department of Commerce, Community and Economic Development
AIDEA/AEA
Rural Energy Group
813 West Northern Lights Blvd.
Anchorage, Alaska 99503

ALASKA ENERGY AUTHORITY

SETBACK/SEPARATION REQUIREMENTS

THE CONSOLIDATED TANK FARM WILL PERFORM THREE FUNCTIONS – BULK STORAGE, BULK TRANSFER, AND DISPENSING. ALL TANKS ARE INSTALLED ABOVE GROUND. TO COMPLY WITH THE REQUIREMENTS OF THE 2006 INTERNATIONAL FIRE CODE, THE 2002 ALASKA ENERGY AUTHORITY/DIVISION OF FIRE PREVENTION MEMORANDUM OF AGREEMENT, AND STATE OF ALASKA REGULATIONS THE FOLLOWING MINIMUM CLEARANCES ARE REQUIRED:

10' FROM THE DISPENSER TO ALL BUILDINGS AND PROPERTY LINES.

20' FROM THE DISPENSER TO FIXED SOURCES OF IGNITION.

50' FROM THE DISPENSER TO ALL UNPROTECTED TANKS.

50' FROM THE DISPENSER TO THE BULK TRANSFER AREA.

50' FROM UNPROTECTED DISPENSING TANKS TO THE NEAREST IMPORTANT BUILDING OR NEAREST SIDE OF A PUBLIC WAY.

40' FROM 12,001–30,000 GAL BULK STORAGE TANKS TO THE NEAREST PROPERTY LINE WHICH IS OR CAN BE BUILT UPON.

60' FROM 30,001–50,000 GAL BULK STORAGE TANKS TO THE NEAREST PROPERTY LINE WHICH IS OR CAN BE BUILT UPON.

25' FROM THE BULK TRANSFER HOSE STAND TO THE NEAREST TANK, THE NEAREST IMPORTANT BUILDING, THE NEAREST PROPERTY LINE WHICH IS OR CAN BE BUILT UPON, COMBUSTIBLE MATERIALS, AND FIXED SOURCES OF IGNITION. DISTANCE MAY BE REDUCED TO 15' IF NOT USED FOR TRANSFER OF CLASS I LIQUIDS.

25' FROM FUEL TANKS AND PIPELINES TO RESIDENTIAL WATER WELLS

100' FROM FUEL TANKS AND PIPELINES TO PUBLIC WATER WELLS

PUMP SCHEDULE

LABEL	FUNCTION	STYLE	MOTOR
P–1A	GASOLINE DISPENSING	SUBMERSIBLE	3/4HP, 230V
P–1B	AVGAS TRUCK LOADING	SUBMERSIBLE	3/4HP, 230V
P–2A	No.1 DIESEL DISPENSING	SUBMERSIBLE	3/4HP, 230V
P–2B	No.2 DIESEL DISPENSING	SUBMERSIBLE	3/4HP, 230V
P–3	GASOLINE BULK TRANSFER	CENTRIFUGAL	2HP, 230V
P–4	No.1 DIESEL BULK TRANSFER	CENTRIFUGAL	2HP, 230V
P–5	No.2 DIESEL BULK TRANSFER	CENTRIFUGAL	2HP, 230V
P–6	No.1 DIESEL TRUCK LOADING	CENTRIFUGAL	2HP, 230V
P–7	No.2 DIESEL TRUCK LOADING	CENTRIFUGAL	2HP, 230V
P–8	No.1 DIESEL VESSEL LOADING	CENTRIFUGAL	2HP, 230V
P–9	No.2 DIESEL VESSEL LOADING	CENTRIFUGAL	2HP, 230V

State of Alaska
Department of Community and Economic Development
AIDEA/AEA
Rural Energy Group
813 West Northern Lights Blvd.
Anchorage, Alaska 99503
ALASKA ENERGY AUTHORITY

APPENDIX B

CONSTRUCTION COST ESTIMATE

SITE	$154,960	
TANKS	$490,460	
PIPING SYSTEM	$365,560	
PUMPS, DISPENSER, POWER, CONTROLS, ETC.	$243,910	
MISCELLANEOUS	$87,900	
OVERHEAD	$151,450	
FREIGHT	$113,483	
CONSTRUCTION SUB-TOTAL	**$1,607,723**	
DESIGN AND CONSTRUCTION ADMIN.	$125,000	
CONSTRUCTION MANAGEMENT	$125,000	
PROJECT SUB-TOTAL	**$1,857,723**	
CONTINGENCY	$278,658	15 %
TOTAL PROJECT COST	**$2,136,381**	
TOTAL STORAGE CAPACITY		260,000 GAL. GROSS CAPACITY
UNIT COST ($/GALLON CAPACITY)	**$8.22**	

ITEM	QUAN	UNIT	UNIT COST	MATL COST	UNIT HRS	LAB HRS	LAB RATE	LABOR COST	CONTR COST	FREIGHT COST	TOTAL COST	UNIT WT	TOTAL WT(#)
SITE													
Clear, Grade Site	1	lump	$0	$0	240	240	$70	$16,800			$16,800		0
Gravel (2" Minus)	400	cu. yd.	$25.00	$10,000	0.00	0	$70	$0			$10,000		0
Select Gravel (1" Minus)	110	cu. yd.	$30.00	$3,300	0.50	55	$70	$3,850			$7,150		0
Concrete Dike	65	cu.yd.	$200.00	$13,000	10	650	$70	$45,500			$58,500		0
Concrete Slabs	30	cu.yd.	$200.00	$6,000	7	210	$70	$14,700			$20,700		0
Dike Membrane Liner	7,000	sq. ft.	$1.50	$10,500	0.010	70	$70	$4,900			$15,400	0.17	1190
Non-Woven Geotextile	21,000	sq. ft.	$0.15	$3,150	0.002	42	$70	$2,940			$6,090	0.08	1680
6x6 Timbers (Truck Slab)	140	lin.ft.	$3.50	$490	0.10	14	$70	$980			$1,470	10	1400
Dike Drain & Sump	1	lump	$1,250	$1,250	40.00	40	$70	$2,800			$4,050	250	250
6' Chain-Link Fence	400	lin.ft.	$12.50	$5,000	0.35	140	$70	$9,800			$14,800	15.00	6000
TANKS													
Drain Existing Tanks	6	ea.	$150	$100	10	60	$70	$4,200			$4,300		0
New 30,000 Vert Tank	2	ea	$45,000	$90,000	0	0	$70	$0			$90,000		0
New 40,000 Vert Tank	4	ea	$60,000	$240,000	0	0	$70	$0			$240,000		0
New 20,000 Part Tank	2	ea	$45,000	$90,000	0	0	$70	$0			$90,000		0
Emergency Vents	10	ea	$450	$4,500	2	20	$70	$1,400			$5,900	75	750
Pressure/Vacuum/Whistle Vents	10	ea	$450	$4,500	2	20	$70	$1,400			$5,900	20	200
Clock Type Gauges	4	ea	$450	$1,800	2	8	$70	$560			$2,360	20	80
Vertical Tank Gauges	6	ea	$2,000	$12,000	20	120	$70	$8,400			$20,400	100	600
Concrete Tank Foundations	36	cu.yd.	$200	$7,200	7	252	$70	$17,640			$24,840	600	21600
Place Tanks on Foundations	8	ea	$0	$0	8	64	$70	$4,480			$4,480		0
Paint Contingency Tank	300	sq.ft.	$0.60	$180	0.10	30	$70	$2,100			$2,280	0.20	60
PIPING SYSTEM													
Demolish Old Piping	1	lump	$0	$0	100	100	$70	$7,000			$7,000		0
4" Sch 80 Coated Buried	1,200	lin. ft.	$30.00	$36,000	0.40	480	$70	$33,600			$69,600	15	18000
4" Sch 80 Coated Dock-Mounted	600	lin. ft.	$30.00	$18,000	0.50	300	$70	$21,000			$39,000	15	9000
4" Sch 40 Inside Dike	300	lin. ft.	$20.00	$6,000	0.12	36	$70	$2,520			$8,520	15	4500
3" Sch 80 Coated Buried	400	lin. ft.	$20.00	$8,000	0.25	100	$70	$7,000			$15,000	10	4000
3" Sch 80 Coated Dock-Mounted	200	lin. ft.	$20.00	$4,000	0.50	100	$70	$7,000			$11,000	10	2000
3" Sch 40 Inside Dike	500	lin. ft.	$20.00	$10,000	0.12	60	$70	$4,200			$14,200	8	4000
2" Sch 80 Coated Buried	1,200	lin. ft.	$14.00	$16,800	0.25	300	$70	$21,000			$37,800	5	6000
2" Sch 80 Coated Dock Mounted	1,050	lin. ft.	$14.00	$14,700	0.50	525	$70	$36,750			$51,450	5	5250
2" Sch 80 Inside Dike	200	lin. ft.	$14.00	$2,800	0.12	24	$70	$1,680			$4,480	5	1000
1" Sch 160 PRV Piping	150	lin. ft.	$7.00	$1,050	0.10	15	$70	$1,050			$2,100	3	450
Paint Non-Coated Piping	1,000	sq.ft.	$0.75	$750	0.10	100	$70	$7,000			$7,750	0.20	200
Misc Strut & Pipe Clamps	1	lump	$8,000	$8,000	100	100	$70	$7,000			$15,000	400	400

ITEM	QUAN	UNIT	UNIT COST	MATL COST	UNIT HRS	LAB HRS	LAB RATE	LABOR COST	CONTR COST	FREIGHT COST	TOTAL COST	UNIT WT	TOTAL WT(#)
Flexible Connectors	45	ea	$175	$7,875	1	45	$70	$3,150			$11,025	10	450
Manifold & Dispensing Fittings	1	lump	$5,000	$5,000	150	150	$70	$10,500			$15,500	5000	5000
4" Flanged SS Gate Valves	3	ea	$600	$1,800	2	6	$70	$420			$2,220	110	330
4" Flanged SS Check Valves	3	ea	$500	$1,500	2	6	$70	$420			$1,920	110	330
3" Flanged SS Gate Valves	1	ea	$500	$500	2	2	$70	$140			$640	65	65
3" Flanged SS Check Valves	1	ea	$400	$400	2	2	$70	$140			$540	65	65
2" Flanged SS Ball Valves	5	ea	$300	$1,500	1	5	$70	$350			$1,850	30	150
1" Flanged SS Piston Check	5	ea	$300	$1,500	1	5	$70	$350			$1,850	30	150
4" Flanged Gate Valves	6	ea	$450	$2,700	2	12	$70	$840			$3,540	110	660
4" Flanged Check Valves	3	ea	$400	$1,200	2	6	$70	$420			$1,620	110	330
3" Flanged Ball Valves	6	ea	$350	$2,100	2	12	$70	$840			$2,940	50	300
3" Flanged Check Valves	1	ea	$300	$300	2	2	$70	$140			$440	65	65
2" Flanged Ball Valves	10	ea	$200	$2,000	1	10	$70	$700			$2,700	30	300
2" Flanged Check Valves	4	ea	$200	$800	1	4	$70	$280			$1,080	30	120
1" Flanged Ball Valve	2	ea	$100	$200	1	2	$70	$140			$340	30	60
1" Flanged Piston Check	8	ea	$175	$1,400	1	8	$70	$560			$1,960	30	240
1" Flanged Swing Check Valve	3	ea	$125	$375	1	3	$70	$210			$585	30	90
Misc Threaded Ball Valves	1	lump	$400	$400	10	10	$70	$700			$1,100	50	50
2" Actuator Valves	3	ea	$2,200	$6,600	2	6	$70	$420			$7,020	35	105
1" Flanged PRV	15	ea	$500	$7,500	1	15	$70	$1,050			$8,550	10	150
2" Strainers	5	ea	$450	$2,250	1	5	$70	$350			$2,600	50	250
2" Pipeline Filter	8	ea	$1,300	$10,400	4	32	$70	$2,240			$12,640	20	160
PUMPS, DISPENSER, POWER, CONTROLS, ETC.													
Dual Prod Mech Dispnsr	1	ea	$5,000	$5,000	40	40	$70	$2,800			$7,800	400	400
Card Reader Control System	1	ea	$6,000	$6,000	40	40	$70	$2,800			$8,800	100	100
2 HP Centrifugal Pumps	5	ea	$2,250	$11,250	6	30	$70	$2,100			$13,350	100	500
3/4 HP Submersible Pumps	4	ea	$1,400	$5,600	6	24	$70	$1,680			$7,280	100	400
Grounding Reel	1	ea	$250	$250	2	2	$70	$140			$390	20	20
Hose Reel	5	ea	$1,250	$6,250	20	100	$70	$7,000			$13,250	100	500
Truck Top Fill Rack	1	ea	$35,000	$35,000	40	40	$70	$2,800			$37,800	100	100
1-1/2" Bulk Transfer Hose	300	lin. ft.	$17	$5,100	0.10	30	$70	$2,100			$7,200	1.5	450
1" Hose	150	lin. ft.	$14	$2,100	0.10	15	$70	$1,050			$3,150	1.0	150
3/4" Hose	50	lin. ft.	$12	$600	0.10	5	$70	$350			$950	1.0	50
Bulk Transfer Nozzle & Acces.	8	ea	$425	$3,400	1	8	$70	$560			$3,960	10	80
Custody Transfer Meter	8	ea	$3,000	$24,000	10	80	$70	$5,600			$29,600	100	800
Pipeline Filters	8	ea	$1,200	$9,600	3	24	$70	$1,680			$11,280	50	400
Control Panels	1	lump	$25,000	$25,000	100	100	$70	$7,000			$32,000	200	200

ITEM	QUAN	UNIT	UNIT COST	MATL COST	UNIT HRS	LAB HRS	LAB RATE	LABOR COST	CONTR COST	FREIGHT COST	TOTAL COST	UNIT WT	TOTAL WT(#)
3-Point High/Low Level Switches	3	ea	$1,600	$4,800	5	15	$70	$1,050			$5,850	50	150
Meter Base & Panel Board	1	lump	$1,250	$1,250	60	60	$70	$4,200			$5,450	200	200
Area Lighting	1	lump	$2,000	$2,000	40	40	$70	$2,800			$4,800	300	300
Conduit, Conductors, & Devices	1	lump	$30,000	$30,000	300	300	$70	$21,000			$51,000	2000	2000
MISCELLANEOUS													
Misc. Alum. Fabrications	1	lump	$35,000	$35,000	200	200	$70	$14,000			$49,000	5000	5000
Form Lumber, Lags, Nails, Etc	1	lump	$5,000	$5,000	40	40	$70	$2,800			$7,800	1000	1000
Portable Fuel Transfer Pump	1	ea	$1,000	$1,000	0	0	$70	$0			$1,000	100	100
Signs & Valve Tags	1	lump	$2,500	$2,500	30	30	$70	$2,100			$4,600	100	100
Spill Response Supplies	1	lump	$3,000	$3,000	0	0	$70	$0			$3,000	600	600
SmartAsh with spare parts	1	lump	$3,500	$3,500	0	0	$70	$0			$3,500	200	200
Misc Hardware	1	lump	$4,000	$4,000	0	0	$70	$0			$4,000	500	500
Misc Tools & Safety Gear	1	lump	$7,500	$7,500	0	0	$70	$0			$7,500	500	500
Welding Rod, Gases, Etc.	1	lump	$7,500	$7,500	0	0	$70	$0			$7,500	2000	2000
OVERHEAD													
Audit Grants	1	lump							$6,000		$6,000		0
ROW Legal Work	1	lump							$10,000		$10,000		0
Construction Insurance	1	lump							$5,500		$5,500		0
First Year Operation Insurance	1	lump							$11,500		$11,500		0
Rent Skid Steer from Juneau	1	lump							$12,000		$12,000		0
Rent Local Heavy Equip	1	lump							$45,000		$45,000		0
Misc Tool Rent	1	lump							$2,500		$2,500		0
Project Diesel Fuel/Gasoline	1	lump							$2,500		$2,500		0
Commission System & Training	15	hr			1	15	$90	$1,350			$1,350		0
Superintendent Overhd Off-Site	40	hr			1	40	$90	$3,600			$3,600		0
Superintendent Overhd On-Site	40	hr			1	40	$90	$3,600			$3,600		0
Crew Travel Time	160	hr			1	160	$90	$14,400			$14,400		0
Crew Airfares	10	trips							$8,000		$8,000		0
Crew Per Diem	500	mn.dy							$21,000		$21,000		0
Housing Rent	3	mo.							$4,500		$4,500		0

ITEM	QUAN	UNIT	UNIT COST	MATL COST	UNIT HRS	LAB HRS	LAB RATE	LABOR COST	CONTR COST	FREIGHT COST	TOTAL COST	UNIT WT	TOTAL WT(#)
FREIGHT													114,830
Barge Concrete Seattle-Hoonah	600000	lb.	$0.06							$36,000			
Barge Freight Seattle-Hoonah	114830	lb.	$0.10							$11,483			
Barge Tanks Seattle-Hoonah	3200	sq.ft.	$15.00							$48,000			
Ferry Supplies & Equip	1	lump	$10,000							$10,000			
Ferry Mob & De-Mob	1	lump	$4,000							$4,000			
Misc Small Freight & Gold Streak	1	lump	$4,000							$4,000			
CONSTRUCTION SUB-TOTAL				$933,570		6,101		$432,170	$128,500	$113,483	$1,607,723		
Engineering (Design & CCA)	1	lump							$125,000				
Construction Management	1	lump							$125,000				
PROJECT SUB-TOTAL				$933,570				$432,170	$378,500	$113,483	$1,857,723		
Contingency	15	%									$278,658		
								TOTAL PROJECT COST			**$2,136,381**		

APPENDIX C

SITE CONTROL DOCUMENTS

First American

First American Title Insurance Company
315 Seward St, Ste E
Sitka, AK 99835
Phn - (907)747-7166
Fax - (907)747-7151

CERTIFICATE TO PLAT

To: Alaska Energy and Engineering, Inc.
PO Box 111405
Anchorage, AK 99511-0405

Order No.: 0249-1011635
Plat: Hoonah BFU Project

Attn: John Dickerson

Fee: $500.00

This is a Certificate as of March 23, 2007 at 8:00 A.M. for a plat of the following described property:

Parcel No. 1:

That portion of Lot 3, U.S. Survey 4539, Sitka Recording District, First Judicial District, State of Alaska, more particularly described as follows:

Beginning at Corner No. 12 of said Lot 3, U.S. Survey 4539; thence Southeasterly along the Line 12-11 said Lot a distance of 255 feet, more or less to a point; thence perpendicular and in a Northeasterly direction 200 feet, more or less, to a point; thence in a Northwesterly direction, and parallel to the Line 12-11 of said Lot a distance of 230 feet, more or less, to a point on the Line 12-13 of said Lot; thence Southwesterly along the Line 12-13 a distance of 202 feet, more or less, to the point of beginning.

Parcel No. 2:

That portion of Alaska Tidelands Survey No. 29, Sitka Recording District, First Judicial District, State of Alaska, commonly referred to as "City Dock", said portion also lies Southwesterly of Parcel No. 1, contained herein, and Southeasterly of the "New Marine Industrial Center".

The Company certifies that record title is vested in:

City of Hoonah, Alaska

free from all liens, encumbrances and objections EXCEPT AS FOLLOWS:

SUBJECT TO:

1. Reservations or exceptions in patents or in acts authorizing the issuance thereof.

2. Reservations and exceptions as contained in the State of Alaska Patent.

   Said patent, among other things, reserves all oil, gas and other minerals together with the privileges, mining and drilling rights and immunities.

3. Subject property does not lie within an organized taxing district.

4. Rights of the public and of governmental bodies in and to that portion of the premises herein described lying below the high water mark of Port Frederick.

5. Terms, provisions and reservations under the Submerged Land Act (43 U.S.C.A. Sections 1301 through 1311) and the rights of the United States of America to regulate commerce, navigation, flood control, fishing and production of power.

6. Any adverse claim based upon the assertion that some portion of said land is tide or submerged lands, or has been created by artificial means or has accreted to such portion so created.

7. Any preference rights which may exist under the Alaska Land Act, terms, provisions and reservations under the Submerged Lands Act (43 USCA 1301, 67 Stat. 29) and the enabling act (Public Law 85-508, 72 Stat. 339).

8. Any prohibition or limitation on the use, occupancy or improvements of the land resulting from the right of the public or riparian owners to use any waters which may cover the land or to use any portion of the land which is now or may formerly have been covered by water.

9. The effect of the notes which appear on the plat of said subdivision. (Copy attached)

10. Rights of the public and/or governmental agencies in and to any portion of the above described real property lying within any roadway or public easement areas.

11. Unrecorded leases or periodic tenancies, if any.

12. Resolution No. 005-72 including the terms and provisions thereof:

Dated:	June 13, 1972
Recorded:	April 5, 1984 in Book 64 at Page 522
Executed by:	City of Hoonah

Amended by instrument recorded June 2, 1992 in Book 97 at Page 655

13. Right of Way Easement, including the terms and provisions thereof, granted to Tlingit-Haida Regional Electrical Authority , and it's assigns and/or successor's in interest, to construct, operate and maintain an electric transmission and/or telephone distribution line or system by instrument

Recorded:	June 27, 1988
Recording Information:	Book 82 Page 50
Affects:	Blanket Easement

14. Certificate of Boundaries of the City of Hoonah including the terms and provisions thereof:

Dated:	December 26, 1989
Recorded:	January 5, 1990, Book 87 Page 825
Executed by:	Alaska Department of Community and Regional Affairs

15. Easement, including terms and provisions contained therein:

Recording Information:	July 11, 1991 in Book 93 at Page 635
In Favor of:	State of Alaska, Department of Transportation and Public Facilities
For:	Highway purposes, including permitting of utility crossings, utility poles, down guys, anchors, overhead utility lines, underground utilities, drainage structures, road slope limits and incidental purposes
Affects:	See Instrument
Affects:	Parcel No. 1

16. Easement, including terms and provisions contained therein:

Recording Information:	July 11, 1991 in Book 93 at Page 675
In Favor of:	State of Alaska, Department of Transportation and Public Facilities
For:	Highway purposes, including permitting of utility crossings, utility poles, down guys, anchors, overhead utility lines, underground utilities, drainage structures, road slope limits and incidental purposes
Affects:	See Instrument
Affects:	Parcel No. 2

17. Right of Way Easement, including the terms and provisions thereof, granted to Tlingit-Haida Regional Electrical Authority , and it's assigns and/or successor's in interest, to construct, operate and maintain an electric transmission and/or telephone distribution line or system by instrument

Recorded:	December 5, 1991
Recording Information:	Book 95 Page 550
Affects:	Blanket Easement

18. Hoonah Arterial Stage II, Right of Way Map including the terms and provisions thereof:

Dated:	July 21, 1989
Recorded:	December 29, 1994 as Plat No. 94-29
Executed by:	State of Alaska, Department of Transportation & Public Facilities

19. Right of Way Easement, including the terms and provisions thereof, granted to Tlingit-Haida Regional Electrical Authority , and it's assigns and/or successor's in interest, to construct, operate and maintain an electric transmission and/or telephone distribution line or system by instrument

Recorded:	January 16, 1996
Recording Information:	Book 118 Page 791
Affects:	Blanket Easement

20. Right of Way Easement, including the terms and provisions thereof, granted to Tlingit-Haida Regional Electrical Authority , and it's assigns and/or successor's in interest, to construct, operate and maintain an electric transmission and/or telephone distribution line or system by instrument

Recorded:	February 5, 1998
Recording Information:	Book 128 Page 712
Affects:	Blanket Easement

21. Right of Way Easement, including the terms and provisions thereof, granted to Tlingit-Haida Regional Electrical Authority , and it's assigns and/or successor's in interest, to construct, operate and maintain an electric transmission and/or telephone distribution line or system by instrument

Recorded:	February 5, 1998
Recording Information:	Book 128 Page 714
Affects:	Blanket Easement

22. The legal descriptions contained herein are portions of larger parcel and were created by information provided by the client. This company assumes no responsibility as to the accuracy or completeness of the measurements for this report or the proposed plat.

This report is restricted to the use of the addressee, and is not to be used for closing any transaction affecting title to said property. Liability of the Agency is limited to the amount of fee paid herein.

First American Title Insurance Company

Wesley E. Keller

Wesley E. Keller, Sr. Title Officer

Alaska Energy and Engineering, Inc.
Mailing Address - P.O. Box 111405
Anchorage, AK 99511-1405
(907) 349-0100
349-8001 fax

March 15, 2007

First American Title of Alaska
Attn: Mary
2227 N. Jordan Avenue
Juneau, AK 99801

3 Pages via email: mdornbirer@firstam.com

Subject: **Hoonah BFU Project Certificate to Plat Information**

Dear Mary:

Please find enclosed Sheet M1 of 1, Hoonah Bulk Fuel Upgrade Project. Please prepare a Certificate to Plat including the following properties:

Parcel 1: Lot 3/1, USS 4539
Parcel 2: ATS 29 (City Dock Location immediately southwest of Lot 3/1, USS4539)
Parcel 3/2: Gartina Highway (ROW between items 1 and 2, above)

The Certificate to Plat is needed no later than March 26, 2007

You are authorized to bill up to $500 for this effort. If you anticipate exceeding this amount, please call me prior to proceeding.

If you have any questions, please call me at (907) 349-0100, or fax your comments to (907) 349-8001.

Sincerely,

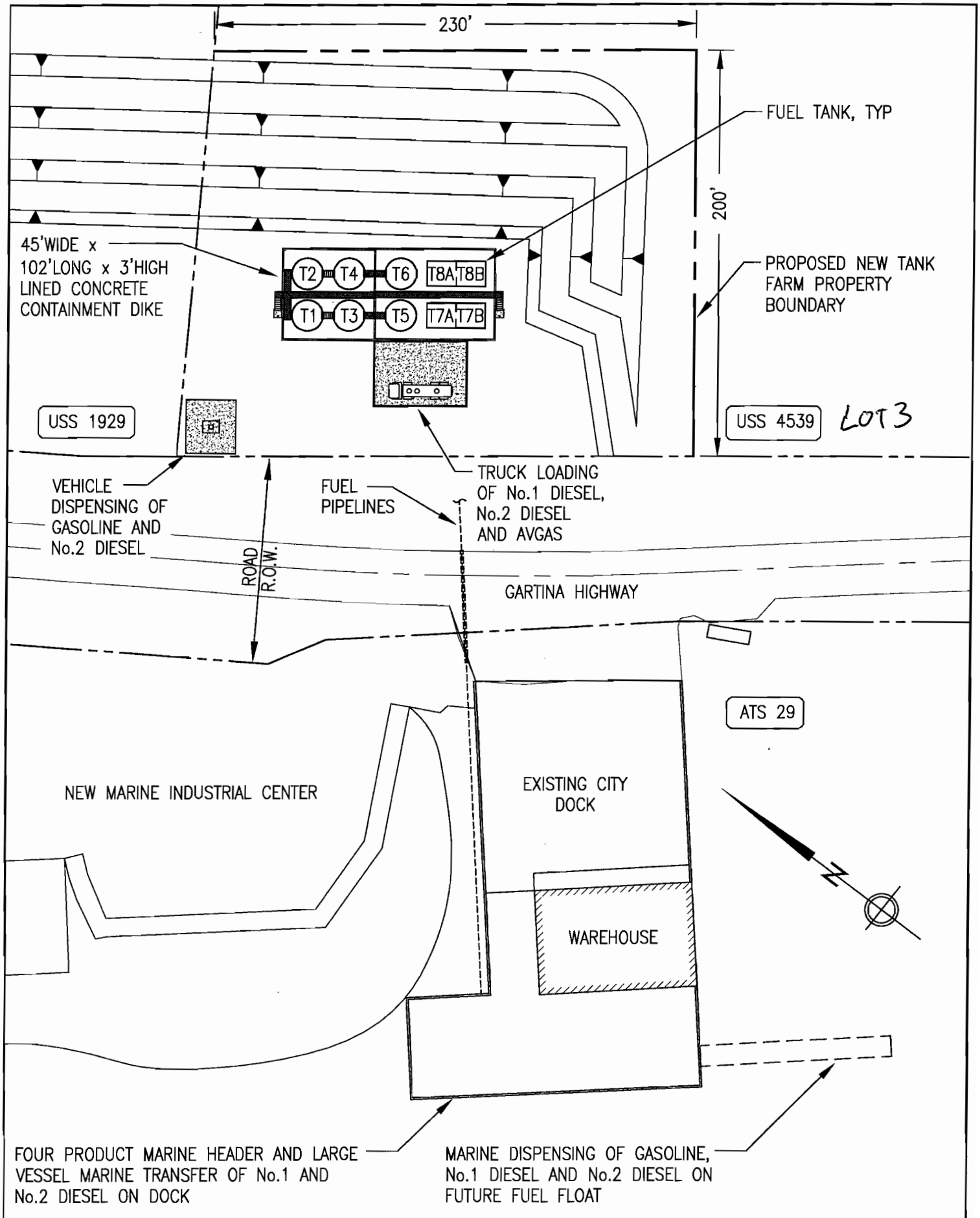
Alaska Energy and Engineering, Inc.

Steven J. Stassel, P.E.
President

Attachments – as noted

3/22/07 @ 11:45 AM
- I LEFT VM FOR MARY — WRONG LOT??
- WES FROM FIRST AMERICAN TITLE CALLED
- HE HAS BEEN IN CONTACT W/ STEVE VIA EMAIL.
- WES SAID SW CORNER LOT 3
- HAS BEEN IN CONTACT W/ CITY REGARDING OWNERSHIP PARCEL 2.
- WES ASKED FOR STD EMAIL.

TDK



PROJECT: HOONAH BULK FUEL UPGRADE PROJECT	DRAWN BY: JTD	SCALE: 1"=60'	State of Alaska Department of Community and Economic Development AIDEA/AEA Rural Energy Group 813 West Northern Lights Blvd. Anchorage, Alaska 99503 ALASKA ENERGY AUTHORITY
	DESIGNED BY: BCG	DATE: 3/13/07	
TITLE: CERT TO PLAT AREA PLAN	FILE NAME: HOONAH CERT	SHEET: M1 OF: 1	

APPENDIX D

COMMUNITY CORRESPONDENCE

jdickerson@acsalaska.net

From: "David Lockard" <DLockard@aidea.org>
To: "Vern Rauscher" <vrauscher@alaska.com>; "Peter Bibb" <pbibb@ak.net>; "Keith Berggren" <kberggren@alaska.com>; "Corry Hildenbrand" <Corry.Hildenbrand@aelp.com>; "Tim McLeod" <Tim.Mcleod@aelp.com>; "Jerry Medina" <jmedina@cityofhoonah.org>; "Jan Supler" <JanS@wardscove.com>; "Hoonah Trading-Steve Brown" <spb115@hoonah.net>; "Dick Somerville" <dsomerville@pnd-jnu.com>; "Dennis Gray Jr." <dgrayjr@cityofhoonah.org>
Cc: "David Lockard" <DLockard@aidea.org>; "John Dickerson" <jdickerson@acsalaska.net>
Sent: Monday, November 13, 2006 5:19 PM
Attach: HOONAH 10-19-06 DRAFT TRIP REPORT.pdf
Subject: FW: Hoonah trip report

Folks-

Here is the report we promised you. John just completed it today.

There are some minor aspects of the proposed bulk fuel facility that may not qualify for Denali Commission funding. However, we can discuss those as the project develops.

Please review this report and provide any comments to me by Monday, 11/20/06.

We plan to have a draft conceptual design report ready for review by April 1st, 2007.

David

Hoonah Energy Infrastructure Projects
10/20/06 Trip Report & Preliminary Information

November 13, 2006

On Thursday October 19 and 20, 2006, David Lockard of the Alaska Energy Authority / Rural Energy Group (AEA/REG) and John Dickerson of Alaska Energy and Engineering (AE&E) traveled to Hoonah. The purposes of this site visit were to: 1) meet with local officials as well as representatives of local and regional organizations to identify and discuss potential energy infrastructure projects within the community; 2) to gather reconnaissance level information for preparation of a Conceptual Design Report (CDR) for any identified energy infrastructure projects and; 3) to collect field data for the installation of a new 12,000 gallon double wall fuel tank at the IPEC power plant.

After a short weather delay in Juneau we arrived in Hoonah by plane around 1 PM. After a tour of the community we met Keith Berggren, Peter Bibb and Thomas Jack of Inside Passage Electrical Cooperative (IPEC) at the power plant. We spent the afternoon inspecting the IPEC facility and as-builting the site in order to determine a suitable location for the proposed new fuel tank. A meeting was held the next morning at 8 AM to discuss potential energy infrastructure projects in Hoonah. David Lockard discussed the AEA/REG rural energy programs as well as Denali Commission (DC) funding requirements. Much of the meeting was spent discussing the proposed AEL&P Hoonah intertie extension as well as potential local hydro projects, the proposed City/Hoonah Trading consolidated bulk fuel storage project and the potential use of generation heat recovery in Hoonah. Meeting attendees included:

- Dennis H. Grey, Sr., Mayor, City of Hoonah
- Jerry Medina, Administrator, City of Hoonah
- Jan Supler, Vice President Retail Operations, Wards Cove/Hoonah Trading
- Steve Brown, General Manager, Hoonah Trading
- Tim McLeod, General Manager, AEL&P
- Corry Hildenbrand, Energy Resource Developer, AEL&P
- Vern Rauscher, General Manager, IPEC
- Keith Berggren, Generation Manager, IPEC
- Peter Bibb, Distribution Manager, IPEC
- Dick Somerville, P.E., PND Engineers
- Don Reid, Alaska Marine Lines

Following the meeting we reviewed plans for the new Hoonah Marine Industrial Center and visited the site where phase I of the project is currently under construction. Discussions were held regarding the preferred location and layout of the proposed consolidated bulk fuel storage facility, automotive gas station, truck loading/bulk transfer facility, marine dispensing float, large vessel marine fuel dock and marine header.

The following report is based on reconnaissance level information gathered during and subsequent to this site visit. It includes preliminary information on:

1) Proposed AEL&P Hoonah intertie extension
2) AC vs HVDC transmission technology for the Hoonah Intertie
3) Three potential local hydroelectric projects near Hoonah

4) Potential generation heat recovery project
5) Existing IPEC power plant
6) Estimated future community power demand
7) Proposed IPEC power plant upgrades
8) Replacement generator selection
9) Proposed IPEC distribution upgrades
10) Existing IPEC tank farm
11) New IPEC power plant fuel tank
12) Existing Hoonah Trading bulk fuel storage facility
13) Required community fuel storage capacity
14) Proposed new tank farm, bulk transfer and dispensing facilities
15) Alternative energy

This report along with comments from project participants will outline the issues to be addressed in the CDR.

1) AEL&P Hoonah Intertie Extension:

The proposed Hoonah intertie extension is part of a long term effort by AEL&P, IPEC, The Southeast Conference and the City of Hoonah to construct a transmission link between Juneau and Hoonah. The intertie would allow the community of Hoonah to take advantage of AEL&P's excess hydroelectric generation capacity and eliminate diesel generation in the community.

The first leg of the intertie to the Greens Creek mine was completed in July, 2006 at a cost of approximately $9 million. This leg included a 9.5 mile long submarine cable between Douglas and Admiralty Islands as well as six miles of overhead transmission line to the Greens Creek Mine. According to AEL&P current average loads at the mine are running around 8 megawatts and near term total annual energy requirements are expected to be in excess of 70GWh, higher than originally anticipated.

If constructed, the Hoonah intertie extension would include a 25 mile long submarine cable between Admiralty and Chichagof Islands as well as a 3 mile long overhead transmission line to Hoonah. According to a recently updated estimate by AEL&P the cost of the Hoonah Intertie would be approximately $29 million for design, permitting and construction. The long term annual energy requirements of Hoonah are expected to be 6 to 7GWh. Permitting would likely take one to two years. Engineering completed to date includes a power flow analysis by Power Engineers, Inc. and a preliminary submarine cable design by Nexans and BC Hydro. An amount of $1 million was recently awarded to IPEC by DOE for submarine cable route bathymetric studies and permitting.

According to AEL&P, if the Hoonah intertie were constructed today the rate to IPEC would be $.10/KWh and would include all O&M as well as a contingency for cable repairs and replacement. This rate would be "interruptible" in that Juneau area customers would receive first priority in times of limited hydroelectric generation while Hoonah would have priority of usage over the Greens Creek mine. It is assumed that if constructed the Hoonah intertie would provide virtually all the power required by the community of Hoonah and that

no upgrade to the existing IPEC power plant or new local hydroelectric projects would be considered.

An economic analysis of the Hoonah Intertie titled "Hoonah Intertie Extension - Economic Considerations" was recently prepared for AEA by Emerman Consulting, LLC and will be included as an appendix in the final Hoonah Energy Infrastructure Upgrade Projects CDR. Four separate scenarios were analyzed using different fuel prices, project schedules and Hoonah energy requirement estimates. The benefit to cost ratios of the four scenarios calculated over the estimated 30 year economic life of the intertie ranged from 0.78 to 0.50.

Additional research on the proposed intertie will be conducted and will be included in the final Hoonah Energy Infrastructure Projects CDR.

2) AC versus HVDC transmission technology for the Hoonah Intertie:

Appendix E of the "Southeast Alaska Intertie Study Phase I Final Report" prepared by D. Hittle & Associates for the Southeast Conference in 2003 includes a report on alternate energy transmission technologies study conducted for the proposed interties. The study concluded that an HVDC (High Voltage Direct Current) system would be feasible but more expensive than an AC system for the Hoonah Intertie. The following are some comparisons of HVDC and AC transmission technology for the proposed Hoonah intertie:

- Submarine cable lengths are limited to between 40 and 50 miles in AC transmission systems due to capacitive currents. HVDC systems make much longer submarine crossings possible because they do not generate capacitive currents. With a crossing length of only around 25 miles the Hoonah intertie is well within the limits for submarine cables in AC systems.
- HVDC systems can carry more current on a given size cable than with an AC system. However, the size of the submarine cable specified for the Hoonah intertie is controlled by the strength requirement of the cable rather than by the conductive capacity. This offsets any potential savings of an HVDC system due to conductor size advantages for the Hoonah intertie.
- Low cost extruded polymer cable has recently been developed for use in HVDC systems. Extruded cables are less expensive than other cable technologies but have little history in submarine applications. There is also as yet no proven technology for repairing a damaged submarine extruded cable.
- HVDC systems can be constructed with a single cable where ground return is used. However a single cable HVDC system is not considered an option for the Hoonah intertie due to environmental, permitting and reliability issues. Therefore a two-cable HVDC system would be required. Three-phase AC submarine cable is available as a bundled unit while the HVDC system would require two separate cables. The per unit cost of the HVDC submarine cable would be less than the bundled three-phase AC cable but the total submarine cable cost for the Hoonah intertie would be higher for the HVDC system due to the requirement of two separate cables.
- An HVDC intertie would require a total of two voltage source converters (VSC) for conversion of AC to HVDC and then back to AC. In 2003 the price estimate of each VSC was $3.2 million.

Additional research into the latest HVDC technology available will be conducted and will be included in the final Hoonah Energy Infrastructure Projects CDR.

3) Three Potential Local Hydroelectric Projects Near Hoonah:

In June, 2002 HydroWest Group, LLC, a subsidiary of AP&T, published a report titled "Reconnaissance of Three Potential Hydroelectric Sites Near Hoonah, Alaska". This report was commissioned by the City of Hoonah. It was preceded by a previous study titled "Gartina Creek Project - A Reconnaissance Report" performed in 1979 by Harza Engineering for the Alaska Power Authority. A review and update of the 1979 report titled "Concept Review Report, Gartina Creek Hydroelectric Project" was performed in 1998 by HDR for the City of Hoonah. The three identified hydroelectric prospects in the Hoonah area are identified as Gartina Creek, Water Supply Creek and Elephant Falls. Water Supply Creek and Elephant Falls are both tributaries of Gartina Creek. All flow data for these three drainages is transposed from the stream gage records of the Kadashan River drainage near Tenakee which is very similar in geology, precipitation, orientation and elevation to the three Hoonah sites.

Gartina Creek

The Gartina Creek project as described in the 2002 HydroWest report consists of the following components:

- A fifteen feet high concrete and rockfill diversion dam.
- A concrete intake structure and sluiceway
- A 54-inch diameter steel pipeline approximately 200 feet long from the intake structure to the powerhouse.
- A 20'x20'x25' high two level reinforced concrete powerhouse
- A single turbine with 600kW three-phase generator.
- Programmable automatic paralleling switchgear with remote control and unattended operation capability.
- A pad-mount disconnect switch and step-up transformer bank adjacent to the powerhouse.
- Approximately four miles of 12.5kV three-phase overhead transmission line to an interconnection near the Hoonah airport.
- An approximately 0.3 mile long access road from an existing Forest Service road to the intake structure and powerhouse.
- The Gartina Creek site is estimated to have an average annual flow of around 66 cfs, a maximum divertible flow of 140 cfs and a net head of 61 feet. Using a flow-duration method, the maximum potential annual generation of this site was estimated in the HydroWest report to be 1,880,00kWH. The estimated construction cost for the Gartina Creek site is $3.75 million based on 2006/2007 construction.

Water Supply Creek

The Water Supply Creek project as described in the 2002 HydroWest report consists of the following components:

- An eight feet high concrete and rockfill diversion dam.

- A concrete intake and sluiceway
- A 5,500 feet long combination 24" diameter HDPE and 20" diameter steel pipeline from the intake structure to the powerhouse.
- A 20'x40'x15' high single story pre-engineered metal building powerhouse.
- A single turbine with 600kW three-phase generator.
- Programmable automatic paralleling switchgear with remote control and unattended operation capability.
- A pad-mount disconnect switch and step-up transformer bank adjacent to the powerhouse.
- Approximately four miles of 12.5kV three-phase overhead transmission line to an interconnection near the Hoonah airport.
- An approximately .25 mile long access road from an existing Forest Service road to the intake structure and powerhouse.
- The Water Supply Creek site is estimated to have an average annual flow of around 9 cfs, a maximum divertible flow of 20 cfs and a net head of 400 feet. Using a flow-duration method, the maximum potential annual generation of this site was estimated in the HydroWest report to be 1,820,00kWH. The estimated construction cost for the Water Supply Creek site is $3.1 million based on 2006/2007 construction.

Elephant Falls

The Elephant Falls project as described in the 2002 HydroWest report consists of the following components:

- An eight feet high concrete and rockfill diversion dam.
- A concrete intake and sluiceway
- A 3,900 feet long combination 18" diameter HDPE and 15" diameter steel pipeline from the intake structure to the powerhouse located on Gartina Creek.
- A 20'x40'x15' high single story pre-engineered metal building powerhouse.
- A single turbine with 600kW three-phase generator.
- Programmable automatic paralleling switchgear with remote control and unattended operation capability.
- A pad-mount disconnect switch and step-up transformer bank adjacent to the powerhouse.
- Approximately four miles of 12.5kV three-phase overhead transmission line to an interconnection near the Hoonah airport.
- An approximately 4,000 feet long access road from an existing Forest Service road to the intake structure and an approximately 7,500 feet long access road from an existing Forest Service road to the powerhouse.
- The Elephant Falls site is estimated to have an average annual flow of around 4 cfs, a maximum divertible flow of 9.3 cfs and a net head of 800 feet. Using a flow-duration method, the maximum potential annual generation of this site was estimated in the HydroWest report to be 1,780,00kWH. The estimated construction cost for the Elephant Falls site is $3.76 million based on 2006/2007 construction.

The potential annual generation capacity calculated for each of these sites is only available if the local load is always in excess of the available hydroelectric generation. During seasonally high stream flow periods, the nighttime community loads will fall below the anticipated 600kW hydroelectric generation capacity. This will result in the usable annual generation capacity being less than the potential annual generation capacity quoted for each site. If two of these sites are developed even less of the potential annual generation would be usable, especially during high flow periods. The annual usable generation from a single and two-site hydroelectric project was estimated using available transposed stream flow data, five percent flow duration charts and IPEC community average load data. The results indicate that if only one of these hydroelectric sites were developed it would provide approximately 30% of Hoonah's near term projected annual generation demand. If two of these sites were developed they would provide approximately 50% of Hoonah's annual generation demand.

The HydroWest report addresses permitting issues for each of these sites. The Gartina Creek and Water Supply Creek projects would fall under the State of Alaska small hydroelectric project exemption from Federal Energy Regulatory Commission (FERC) jurisdiction. Because the Elephant Falls site is within the Tongass National Forest, it would fall under FERC jurisdiction unless a land exchange with the City of Hoonah or Sealaska Corporation could be arranged.

The HydroWest report also addresses environmental issues for each of these sites. The primary environmental concern is the possible impact on anadromous and resident fish populations due to reduced in-stream flows between the intake structure and the power house. Because Water Supply Creek and Elephant Falls are located above Gartina Falls, no anadromous fish will be present and only resident fish populations are of concern. The bypassed reach of stream for the Gartina Creek project does include salmon pools at the base of the falls. This could result in increased bypass flow requirements or significant increases in construction costs.

4) Potential Generation Heat Recovery Project:

The IPEC Hoonah power plant has burned an average of 360,000 gallons of diesel annually over the past two years. An efficient generation heat recovery system will recover the heating energy equivalent of approximately 20% of the fuel burned by the generators. Using this rule of thumb, the IPEC generators have the potential to provide the heating equivalent of over 70,000 gallons of diesel fuel in recovered generation heat annually.

The swimming pool, school buildings, fire hall, senior center, senior apartments, and clinic are all located in the same general vicinity. These six public facilities use approximately 60,000 gallons of diesel annually for space heating.

Ideally the power plant should be located as close as possible to the recovered heat end use facilities to minimize conductive heat looses in the buried pipe. However the existing power plant is located approximately one half mile from the school site where the bulk of the recovered heat would be used and no suitable sites for power plant relocation have been identified. Assuming four inch diameter arctic pipe and a total buried length of one mile for supply and return piping, the conductive heat losses would be the equivalent of approximately 20,000 gallons of diesel annually, reducing the net available recovered generation heat to the equivalent of around 50,000 gallons of diesel.

The final CDR will include a proposed heat recovery pipeline routing plan and cost estimate for supplying recovered heat to the previously mentioned public facilities.

5) Status of Existing Hoonah IPEC Power Plant:

The IPEC (originally THREA) power plant was constructed in the 1977. It is located on the eastern edge of town at the intersection of Gartina Highway and White Alice Site Road. The building is a 40'Wx100'L metal-sided, pre-engineered steel frame structure that houses three generators, an office and a warehouse. The interior walls are covered with painted plywood up to a height of 8' with vinyl-encased fiberglass batt insulation exposed above and across the ceiling. The exterior metal siding is in good condition but the exterior paint is in very poor condition and is peeling badly. The concrete foundation, steel frame members and horizontal steel girts appear to be in good condition. According to the operator, the finish grade around the plant does not drain well and the plant is prone to minor flooding, especially during spring breakup.

There are three Caterpillar generators installed in the power plant. Unit #1 is a model 398 with a capacity of 600kW at 1,200RPM. The 398 is an antiquated pre-combustion design with poor fuel economy and increasingly difficult availability of spare parts. This unit is used for emergency backup only and is slated for replacement. Unit #2 is a model 3512 with a prime capacity of 1,100kW at 1,200RPM. Unit #3 is a model 3512 with a prime capacity of 855kW at 1,200RPM. Units #2 and #3 each have approximately 66,000 total engine hours. With the current schedule of a top-end overhaul every 11,000 hours and a major overhaul every 22,000 hours, IPEC expects to get at least an additional 54,000 hours each from existing units #2 and #3, barring any unforeseen circumstances.

Engine cooling is with three remote radiators located outside at the front of the power plant. Each generator is on a stand-alone cooling system with one radiator. There is currently no generation heat recovery equipment installed.

Power generation is at 4160V 3-phase. There are two separate community feeders with one pole-mounted and one pad-mount step-up transformer bank within the fenced area adjacent to the power plant. Station service is provided by a metered 480V three phase load center as well as an un-metered 120/208V three phase load center. The 5kV manual paralleling switchgear was installed new in 1990. It includes a section for each of the three generators and a feeder/station service section.

6) Estimated Future Community Power Demand

According to IPEC data, the current annual peak generation load in Hoonah is around 900kW, the average demand is around 596kW and the annual generation requirement has averaged 5.2GWh over the past two years. IPEC load data indicates that current seasonal load variations in Hoonah are minor, with summer and winter loads being very even. Steady growth in summer peak loads and annual generation are likely over time due to expected increases in tourism, with annual generation requirements likely to grow to over 6GWh within five years. It appears that both generators #2 and #3 are adequately sized to handle the estimated near term growth in community demand. Additional research will be conducted into potential community peak load and generation requirement growth and will be included in the final CDR.

7) Proposed IPEC Power Plant Upgrades

As mentioned previously, if the proposed AEL&P Hoonah intertie extension is constructed then it is assumed that no upgrades will be performed at the IPEC plant other than the new fuel tank (see item 11). If the community remains reliant exclusively on diesel generation or if a combination of local hydroelectric and diesel generation is the long term solution then the following upgrades to the existing IPEC power plant are proposed. These upgrades are intended to modernize the power plant and to improve the overall fuel efficiency, reliability, fire prevention/protection, noise control and operations at the facility:

- Re-grade area around plant to improve area drainage
- Replace existing generator #1 with new generator
- Replace existing switchgear and relays with new automatic paralleling switchgear
- Replace all exterior sheet metal
- Replace existing ventilation louvers and ridge vent with sound-insulated air intake and exhaust fan ducting
- Replace existing engine coolant piping with common cooling manifold including a heat exchanger to allow for utilization of recovered generation heat
- Replace existing radiators with new radiators and variable speed motor controls
- Replace existing non-operative fire suppression system with new fire suppression system
- Renovate and enlarge control room to contain new switchgear
- Install a used oil blender (the feasibility of this will need to be investigated more thoroughly in the Concept Design Report)

8) Replacement Generator Selection

- If a major renovation of the power plant is deemed necessary it is proposed that the existing antiquated Caterpillar Model 398 generator be replaced with a new, more fuel efficient unit. Assuming that the two existing 3512's are capable of handling the expected near term peak loads, the new generator should be prime rated to efficiently handle night time loads and to provide efficient peak-adding with hydroelectric power if constructed. A thorough investigation of all Caterpillar model gensets prime rated between 500kW and 600kW and available in current EPA tier ratings will be conducted prior to the Concept Design Report.

9) Proposed IPEC Distribution Upgrades

A 12.47/7.2kV overhead distribution system provides electric power to the community of Hoonah. The distribution system is in generally good condition but there is one issue that will need to be addressed in the near future. Phase I of the new Hoonah Marine Industrial Center is currently under construction along Gartina Highway, between the City dock and the ferry terminal. The existing overhead transmission line currently runs across an area that will be used for marine vessel and connex storage in the future. The City would like all distribution in this area to be buried to avoid any potential safety concerns with operating the new facility around the existing overhead power lines.

10) Existing IPEC Tank Farm:

The existing power plant tank farm was built in 1977. It consists of three old BIA style vertical tanks and two ex-military domed-end horizontal tanks in a lined earthen dike as well as a gravity-fed exterior day tank located adjacent to the power plant. The two horizontal tanks have since been taken out of service. The current tank farm configuration has a gross shell capacity of approximately 26,000 gallons, including a 3,000 gallon double wall day tank. All fuel is delivered to this facility by tank truck. Deficiencies at the facility include:

- aging, rusted tanks
- non-liquid tight dike membrane liner
- non-code compliant piping, valves and appurtenances
- lack of piping pressure relief
- lack of cathodic protection on buried pipe
- lack of tank emergency venting
- lack of overfill prevention on 3,000 gallon day tank
- 3,000 gallon day tank too close to the power plant building
- lack of surface flow containment at truck transfer area

11) New IPEC Power Plant Fuel Tank:

Because there is a reliable bulk fuel facility operator and fuel delivery service in Hoonah, IPEC no longer deems it necessary to store such large quantities of fuel at the power plant. At IPEC's request, AEA has approved funding for installation of a single new double wall tank at the power plant to replace the entire existing fuel storage facility. The proposed new tank location was inspected and some preliminary measurements were made during this site visit. The tank installation project will include the following items:

- excavation of hillside at west end of building to enlarge pad for placing new tank
- install new 10' diameter x 20' long 12,000 gallon gross shell capacity horizontal skid-mounted double wall tank with overfill protection
- install new security fencing
- re-grade yard area to provide surface flow containment around truck transfer area
- install new HDPE coated welded steel fuel oil supply and return piping in below grade concrete utilidor between the new tank and power plant to allow for vehicle access to step-up transformers behind power plant - provide removable cover for visual inspection of pipelines

See attached Sheets M1 and M2 for conceptual plans.

The IPEC tank project design will be expedited for summer '07 construction. The tank fabrication drawings will be completed in time for January '07 procurement and an early spring '07 tank delivery schedule. An as-built survey of the IPEC facility with surface contours is required for final site plan development. J. W. Bean Surveying will be in Hoonah around the first of the year to do work for the City and can perform the required survey work at that time. Final design will then be completed by February '07, with permitting and procurement to be completed in time for summer '07 construction.

12) Existing Hoonah Trading Bulk Fuel Storage Facility:

Hoonah Energy Infrastructure Projects
10/20/06 Trip Report & Preliminary Information

The Hoonah Trading bulk fuel storage facility provides storage for virtually all the diesel fuel and gasoline received by the community. The facility consists of six in-service vertical steel bulk storage/dispensing tanks, a three product marine header, a three product marine fueling station, a three product vehicle gas station, a diesel truck loading rack, and three 4" diameter barge fill/distribution pipelines. The tank farm is located on the hillside above the Hoonah Trading store. Tank farm access is by a covered wooden stairway from 1st Street. The fuel is used for local power generation, vehicle dispensing, marine dispensing and heating fuel delivery. All dispensing and bulk transfers are by gravity.

The total gross shell capacity of the six bulk storage/dispensing tanks is approximately 154,000 gallons of #2 diesel, 19,000 gallons of #1 diesel and 38,000 gallons of unleaded gasoline. The facility appears to be old but is well maintained. The tank farm is built on a two-tiered site with four tanks on the lower level and two tanks on the upper level. It is completely surrounded by chain link fence. Concrete walls on the sides and across the front of both tiers provide some surface flow containment but there is no dike membrane liner and the containment is not liquid tight. The tanks are equipped with normal vents and manways. There are 4" flanged bottom connections with flanged steel ball valves and 1" threaded steel PRV jumpers for pipeline pressure relief. The manifold piping appears to be in good condition and is well supported but there are no flexes between tank connections. The tanks are all supported on concrete bases.

There are three each 4" diameter welded steel barge fill/distribution pipelines that run from the marine header to the tank farm, supported under the dock, then buried under the road and finally above grade up the hill to the tank farm.

A three product marine header is located on the end of the fuel dock. Each barge connection has a 4" quick disconnect hose coupling, a 4" flanged steel check valve, and a 4" flanged steel plug valve. There is a steel drip pan that serves all three marine header fill connections which does not appear to have adequate capacity to meet the 84 gallon containment requirement. The marine dispensers are also located under a rain shelter on the face of the fuel dock and are gravity fed with 2" welded steel branch pipelines off of the main 3" barge fill/distribution pipelines.

There is a truck rack located near the Hoonah Trading store that allows for bulk loading #1 or #2 diesel into a tank truck for fuel deliveries throughout the community. There is also a two product gasoline and #2 diesel vehicle dispenser located on the dock near the store.

The following is a summary of existing facility deficiencies observed:

- Improper Secondary Containment (Diking) –Tanks are not within a proper liquid tight secondary containment system of adequate capacity as required by the Fire Code and EPA regulations.
- No Emergency Vents - None of the tanks have emergency vents, in violation of the Fire Code.
- Improper Piping and Valves - Existing piping systems consist of steel piping with a combination of welded and threaded joints. The threaded joints are particularly prone to leaking.
- Gravity Dispensing - Code requires that all fuel dispensing be by pump.
- Above-Ground Dispensing Tank Capacity - State Fire Marshall requirements stipulate that the maximum size of an above ground dispensing tank is 12,000 gallons.

- Dispensing From Above-Ground Tanks Without Protective Systems - State Fire Marshall requirements stipulate protective devices and piping systems to prevent a gravity discharge of fuel in the event of a failure of the dispenser or piping. No protective devices are installed.
- Cathodic Protection of Buried Pipelines - Code requires all buried piping to have cathodic protected.
- Improper Site Location - The existing bulk/dispensing tanks do not appear to meet Fire Code minimum separation distance requirements from adjacent public ways and property lines for unprotected tanks.

This facility does not meet current code or regulation requirements and would not to be cost effective to renovate. Therefore it should be taken out of service and replaced with a new tank farm located at the new Hoonah Marine Industrial Center.

13) Required Community Fuel Storage Capacity:

Hoonah is located on a year round ice free port with a deep water dock capable of receiving ocean-going barges. Fuel deliveries by barge are available from at least two different vendors and are scheduled to be in the area at least twice per month. According to fuel delivery records, the community has recently averaged approximately sixteen barge deliveries per year, spaced from two weeks to one month apart. Based on this delivery schedule and to ensure no future disruptions in fuel supply, the facility should be sized to hold an approximate one peak month supply of each product with an adequate reserve margin. The following table compares the current annual and one peak month use for each product to the proposed net useable tank capacity for the new facility:

CONSUMPTION VERSUS CAPACITY

Product	Average Annual Use in Gallons (1)	Estimt'd Peak 1 Month Use in Gallons	Proposed Net Capacity in Gallons (2)	% of Est. Peak 1 Month Use	% of Est. Annual Use	Proposed Gross Capacity in Gallons
Gasoline	250,000	30,000	36,000	120%	14%	40,000
#1 Diesel	210,000	30,000	36,000	120%	17%	40,000
#2 Diesel	1,000,000	125,000	153,000	122%	15%	170,000
Avgas (3)	0	n/a	9,000	n/a	n/a	10,000
Total	**1,460,000**		**234,000**			**260,000**

(1) *Calendar years 2004 and 2005.*

(2) *Net capacity (90% of gross shell capacity)*

(2) *No existing avgas storage but planning to begin avgas sales at airport*

14) Proposed New Tank Farm, Bulk Transfer and Dispensing Facilities:

The proposed new tank farm will include a total of six each welded steel vertical bulk storage tanks, including four at 40,000 gallons for #2 diesel storage, one at 30,000 gallons for #1 diesel storage and one at 30,000 gallons for gasoline storage. There will also be two horizontal skid-mounted welded steel dispensing tanks, with each tank divided into two

equal 10,000 gallon partitions. The partitions will provide for dispensing of the #2 diesel, #1 diesel and gasoline as well as storage and transfer of avgas. Secondary containment will be provided by a lined concrete dike. A drive-through truck loading facility will provide for top loading of #2 diesel, #1 diesel and avgas. It will be constructed adjacent to the tank farm and situated so that secondary containment is provided by the tank farm dike. A service station style dual product gasoline and #2 diesel dispenser in the center of a two vehicle slab will be installed near the tank farm.

New 4" diameter pipelines will be installed for #2 diesel, #1 diesel and gasoline. A 2" diameter pipeline will be installed for avgas deliveries. The #2 diesel, #1 diesel and gasoline pipelines will be equipped with branch tees and isolation valves to allow them to serve as fill pipelines for barge deliveries as well as distribution pipelines for dispensing and bulk transfer operations. The pipelines will be suspended below the fuel dock and buried from the fuel dock to the new tank farm. A drip pan will be provided on the dock at the termination of the fill pipelines (marine header). A combination of centrifugal and submersible pumps will be used for bulk transfer and dispensing functions.

A large vessel marine fuel transfer facility with hose stands and meters will be located near the marine header on the main fuel dock. A separate fuel float will be used for retail fuel sales to smaller vessels and will include marine dispensing of #2 diesel, #1 diesel and gasoline.

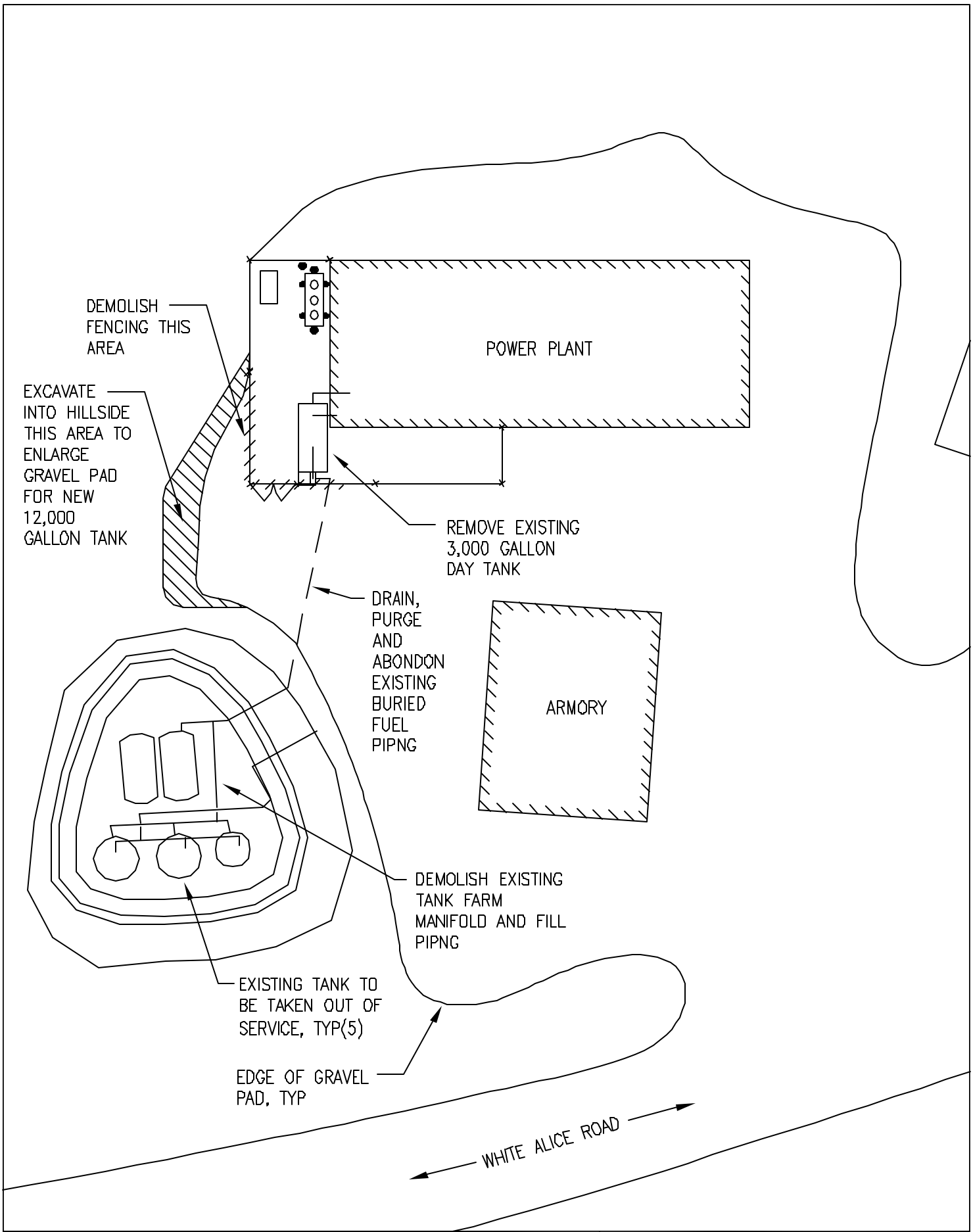
See attached Sheets M3 and M4 for conceptual plans.

A more detailed tank farm conceptual design will be included in the Hoonah Energy Infrastructures Project CDR to be completed by spring '07. If comments are received and a consensus is reached on a facility plan in a timely manner then final design can be completed in time for a spring '08 tank farm construction schedule.

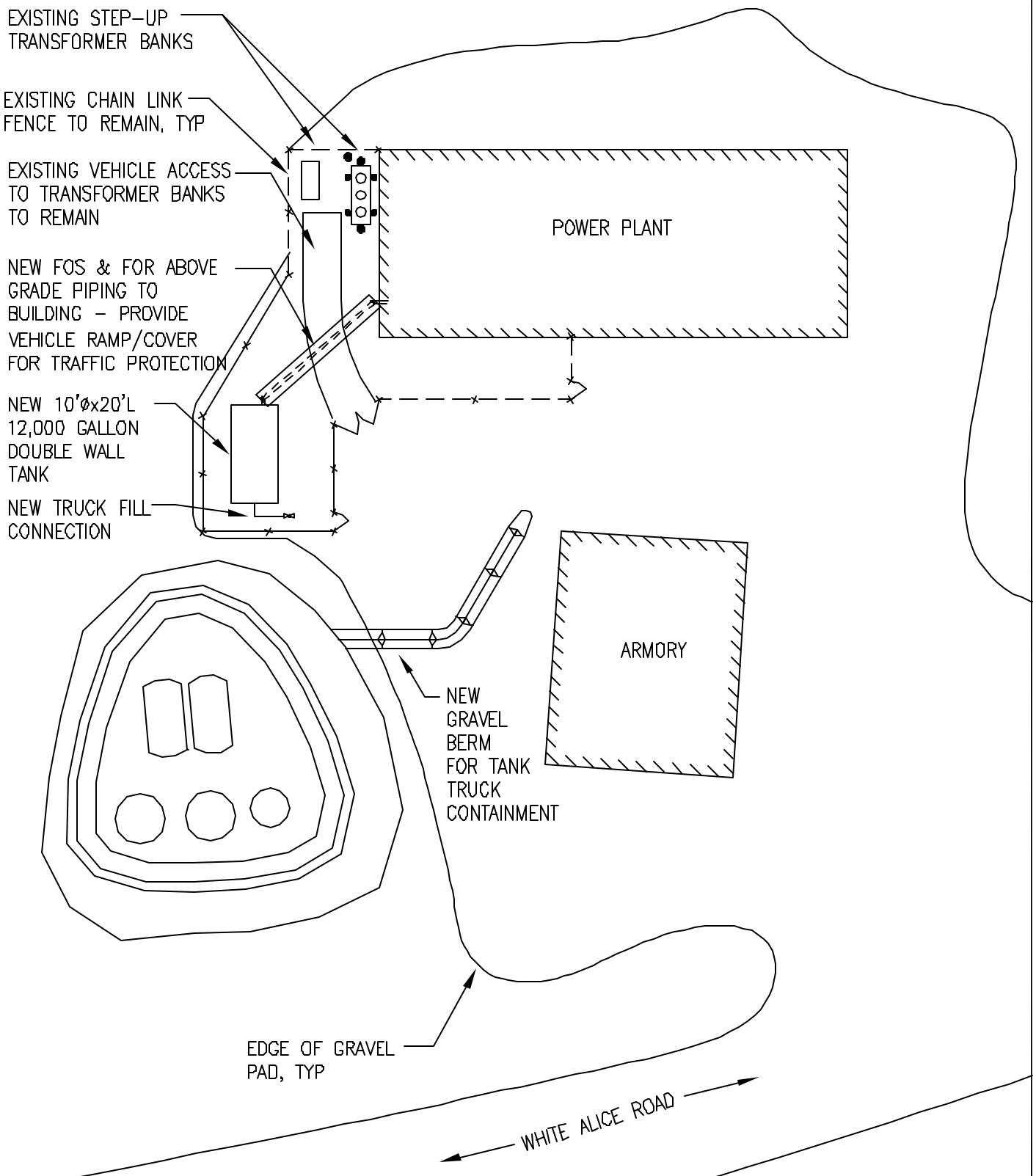
15) Alternative Energy:

The proposed AEL&P intertie as well as potential local hydroelectric and generation heat recovery projects have already been addressed in this report. The Alaska Energy Authority/Alaska Industrial Development and Export Authority published a draft Rural Alaska Energy Plan dated December 31, 2002 as a follow-up report to the previously released Screening Report of Alaska Rural Energy Plan dated April 2001. The Screening Report evaluated a dozen alternative energy technologies other than generation heat recovery. Only wind energy was identified as alternative energy technology warranting further evaluation in the draft Rural Alaska Energy Plan. According to the Wind Energy Resource Atlas of the United States the community of Hoonah is located within a class 3 wind regime and is not a viable candidate for a wind energy program using currently available technologies.

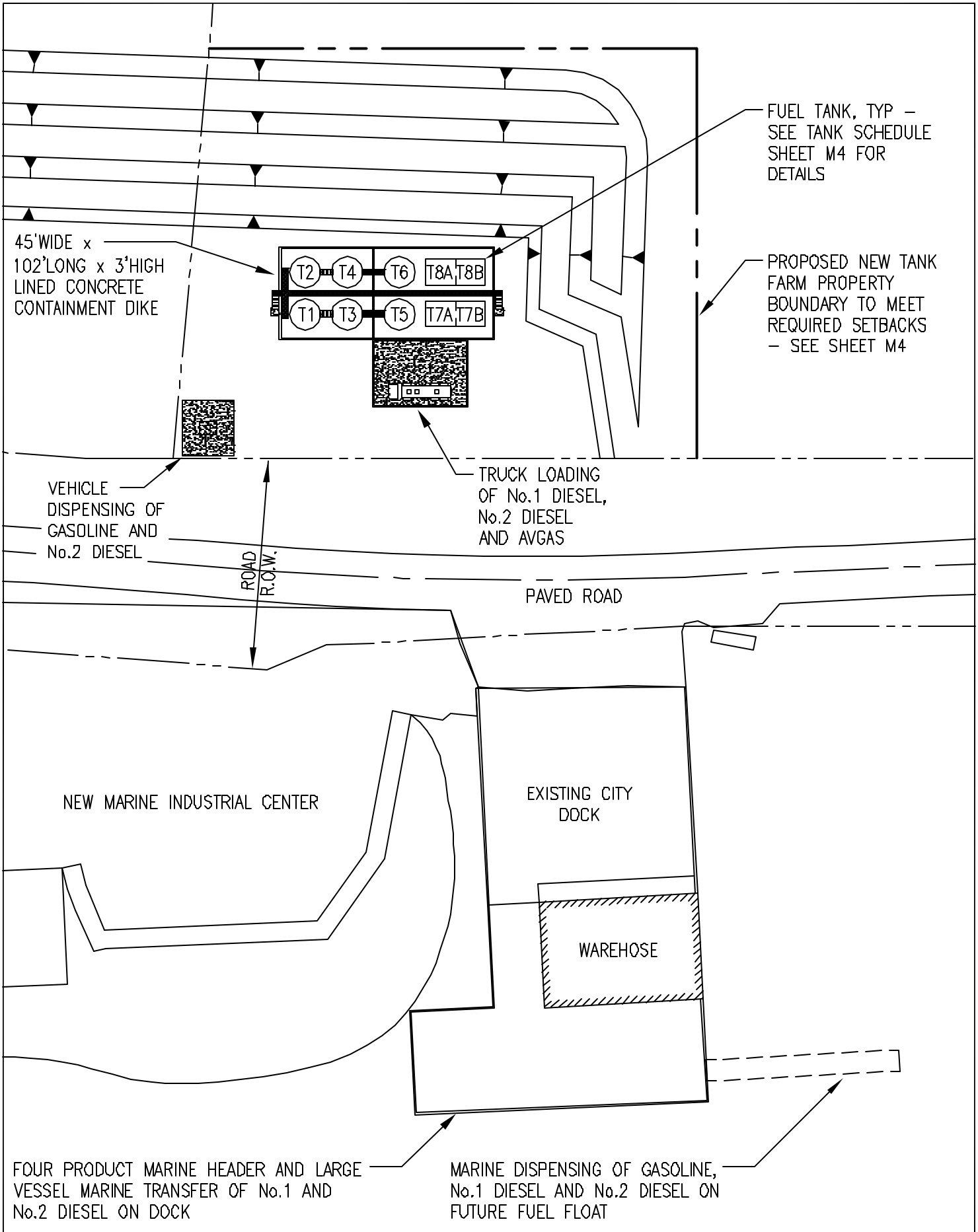
Please review the issues presented and call David Lockard at 269-4541 to discuss or fax your comments to 269-3044. In order to keep the CDR on schedule we need to receive all community comments no later than January 31, 2007. I look forward to working with you on this project.



PROJECT: HOONAH ENERGY INFRASTRUCTURE PROJECTS	DRAWN BY: JTD	SCALE: 1"=30'	State of Alaska Department of Community and Economic Development AIDEA/AEA Rural Energy Group 813 West Northern Lights Blvd. Anchorage, Alaska 99503 ALASKA ENERGY AUTHORITY
	DESIGNED BY: BCG	DATE: 11/13/06	
TITLE: IPEC SITE DEMOLITION/EXCAVATION PLAN	FILE NAME: HOONAH CDR	SHEET: M1 OF: 4	



PROJECT: HOONAH ENERGY INFRASTRUCTURE PROJECTS	DRAWN BY: JTD	SCALE: 1"=30'	State of Alaska Department of Community and Economic Development AIDEA/AEA Rural Energy Group 813 West Northern Lights Blvd. Anchorage, Alaska 99503 ALASKA ENERGY AUTHORITY
	DESIGNED BY: BCG	DATE: 11/13/06	
TITLE: NEW FUEL TANK INSTALLATION PLAN	FILE NAME: HOONAH-CDR	SHEET: M2 OF: 4	



PROJECT: HOONAH ENERGY INFRASTRUCTURE PROJECTS	DRAWN BY: JTD	SCALE: 1"=60'	State of Alaska Department of Community and Economic Development AIDEA/AEA Rural Energy Group 813 West Northern Lights Blvd. Anchorage, Alaska 99503 ALASKA ENERGY AUTHORITY
	DESIGNED BY: BCG	DATE: 11/13/06	
TITLE: PROPOSED NEW TANK FARM SITE PLAN	FILE NAME: HOONAH CDR	SHEET: M3 OF: 4	

SETBACK/SEPARATION REQUIREMENTS

THE CONSOLIDATED TANK FARM WILL PERFORM THREE FUNCTIONS – BULK STORAGE, BULK TRANSFER, AND DISPENSING. ALL TANKS ARE INSTALLED ABOVE GROUND. TO COMPLY WITH THE REQUIREMENTS OF THE 2006 INTERNATIONAL FIRE CODE, THE 2002 ALASKA ENERGY AUTHORITY/DIVISION OF FIRE PREVENTION MEMORANDUM OF AGREEMENT, AND STATE OF ALASKA REGULATIONS THE FOLLOWING MINIMUM CLEARANCES ARE REQUIRED:

10' FROM THE DISPENSER TO ALL BUILDINGS AND PROPERTY LINES.

20' FROM THE DISPENSER TO FIXED SOURCES OF IGNITION.

50' FROM THE DISPENSER TO ALL UNPROTECTED TANKS.

50' FROM THE DISPENSER TO THE BULK TRANSFER AREA.

50' FROM UNPROTECTED DISPENSING TANKS TO THE NEAREST IMPORTANT BUILDING OR NEAREST SIDE OF A PUBLIC WAY.

100' FROM UNPROTECTED DISPENSING TANKS TO THE NEAREST PROPERTY LINE WHICH IS OR CAN BE BUILT UPON.

40' FROM 12,001–30,000 GAL BULK STORAGE TANKS TO THE NEAREST PROPERTY LINE WHICH IS OR CAN BE BUILT UPON.

60' FROM 30,001–50,000 GAL BULK STORAGE TANKS TO THE NEAREST PROPERTY LINE WHICH IS OR CAN BE BUILT UPON.

25' FROM THE BULK TRANSFER HOSE STAND TO THE NEAREST TANK, THE NEAREST IMPORTANT BUILDING, THE NEAREST PROPERTY LINE WHICH IS OR CAN BE BUILT UPON, COMBUSTIBLE MATERIALS, AND FIXED SOURCES OF IGNITION. DISTANCE MAY BE REDUCED TO 15' IF NOT USED FOR TRANSFER OF CLASS I LIQUIDS.

25' FROM FUEL TANKS AND PIPELINES TO RESIDENTIAL WATER WELLS

100' FROM FUEL TANKS AND PIPELINES TO PUBLIC WATER WELLS

TANK SCHEDULE (ALL TANKS NEW CONSTRUCTION)

TANK #	OWNER (1)	TYPE (2)	FUNCTION	#1 DIESEL CAPAC.(3)	#2 DIESEL CAPAC.(3)	GASOLINE CAPAC.(3)	AVGAS CAPAC.(3)
T1	CITY	V	BULK			30,000	
T2	CITY	V	BULK	30,000			
T3	CITY	V	BULK		40,000		
T4	CITY	V	BULK		40,000		
T5	CITY	V	BULK		40,000		
T6	CITY	V	BULK		40,000		
T7A	CITY	SW, PARTITION	DISPENSING			10,000	
T7B	CITY	SW, PARTITION	BULK				10,000
T8A	CITY	SW, PARTITION	DISPENSING	10,000			
T8B	CITY	SW, PARTITION	DISPENSING		10,000		
PROJECT STORAGE CAPACITY BY PRODUCT				**40,000**	**170,000**	**40,000**	**10,000**
PROJECT TOTAL GROSS STORAGE CAPACITY							**260,000**

NOTES:
1) CITY OF HOONAH (CITY)
2) V = VERTICAL, SW = SINGLE WALL HORIZONTAL
3) ALL CAPACITIES ARE GROSS SHELL CAPACITY IN GALLONS

PROJECT: HOONAH ENERGY INFRASTRUCTURE PROJECTS	DRAWN BY: JTD	SCALE: NO SCALE	State of Alaska Department of Community and Economic Development AIDEA/AEA Rural Energy Group 813 West Northern Lights Blvd. Anchorage, Alaska 99503 ALASKA ENERGY AUTHORITY
	DESIGNED BY: BCG	DATE: 11/13/06	
TITLE: PROPOSED NEW TANK FARM SETBACK REQUIREMENTS AND TANK SCHEDULE	FILE NAME: HOONAH CDR	SHEET: M4 OF: 4	

HOONAH BULK FUEL PROJECT
LOCALLY AVAILABLE EQUIPMENT LIST

OWNER	MAKE	MODEL	YEAR	CAPACITY (YDS, TONS)	ATTACHMENTS - (BACK-HOE, FORKS, AUGER, ETC..)	CONDITION, COMMENTS
DUMP TRUCKS						
DOZERS						
LOADERS						
TRACK HOES (EXCAVATORS)						
SKID-STEERS						
CRANES						

HOONAH BULK FUEL UPGRADE PROJECT
LOCAL LABOR POOL

Name	Laborer	Truck Driver	Heavy Equip Operator	Heavy Equip Mechanic	Welders Helper	Certified Welder (1)	Apprentice Electrician	Journeyman Electrician (2)

1) With Current API Welding Certificate
2) With Current Certificate of Fitness

5/18/2007